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STUDIES  
of the  
ROYAL COMMISSION ON TAXATION

Number 3

Taxation and Investment: A Study of Capital  
Expenditure Decisions in Large Corporations

Part 1: Factors Influencing the Size and Timing  
of Capital Expenditures by Large Firms

Part 2: The Effects of Certain Taxation Measures on  
the Size and Timing of Capital Expenditures

by

John F. Helliwell, B.A., B.Com.

Nuffield College

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## INTRODUCTION

This is a study of the factors influencing the capital expenditures of the largest Canadian corporations. Part One contains a general analysis of investment decisions, while Part Two deals specifically with the effects of taxation.

Chapter 1 includes a comparison of the rate of return rules used by 70 large non-government corporations, and a closer look at the formal and informal standards applied in making investment decisions. The second chapter discusses the cost and revenue estimates on which rate of return calculations are based, and examines some evidence showing the margins of error in various types of prediction. (Revenue estimates are considered more fully in Appendix II, dealing with revenue estimates and pricing decisions.) Chapter 3 considers the scope and importance of annual capital budgets and other plans covering large numbers of projects. The subsequent chapter assesses the scope of firms to alter the level of their capital expenditures in the short run, in the light of several of the reasons the firms have had for wishing to do so. Chapter 5 goes beyond the factors determining the quarter-to-quarter and year-to-year changes in capital expenditures to analyze the firms' characteristics and policies determining the rate at which they invest over a longer period of time.

Part Two of the study assumes the view of the investment process contained in Part One, assesses the hypothetical effects of several taxation measures on the marginal efficiency of investment of individual

firms, and makes some attempt to indicate the relative over-all importance of certain taxation measures. The chapters in Part Two use discounted cash flow techniques to represent the effects of certain taxation measures on the marginal efficiency of investment. When interpreting the chapters of Part Two it is necessary to bear in mind the extended discussion in Part One of the relevance of such calculations to the actual investment process.

The study is based on evidence of the investment process in individual firms rather than on a statistical analysis of historical material. It is hoped, however, that the evidence in the study will suggest specific hypotheses which can be tested by econometric methods.

Both parts of the study draw heavily on direct and indirect quotations from interviews and analyses of the capital expenditure records of certain firms. Except where otherwise noted, the examples are chosen because they are of general importance, although it has often been difficult to assess the frequency of particular types of event in the firms studied. The sample of 70 firms contains virtually all the non-government corporations with assets over \$90 million as at the end of 1962. The sources of information include interviews of two to four hours in length with senior officials of 66 of the firms during 1962 and 1963. These interviews were carried out on behalf of the Royal Commission on Banking and Finance, and included a fairly detailed discussion of the investment process within the firms. Most of the deeper insights into the investment process were obtained from case studies, during 1963, of eight of the firms. A week or more was spent in each of the firms, during which time conversations were held with ten or twenty officials in all capaci-

ties, and a detailed examination made of the firms' decision-making procedures. Since the eight firms were chosen to give some coverage to all the important characteristics of the 70 firms, the case study material permitted some valuable re-interpretations of material collected earlier on behalf of the Banking Commission. Appendix I considers the sources of information in more detail.

Appendix III, the final item in the study, attempts to isolate some basic characteristics of the investment behaviour of various types of large corporations controlled outside Canada.

This study owes its existence to the generous co-operation of the many corporate officials who spent hours or days of their time preparing information. Several went over the first draft of this study in detail, and provided many valuable comments. Their interest and kind assistance greatly aided the research. Many members of the Commission staff also gave helpful advice at various stages of the project. To all of these I extend my thanks.

This study was written between September 1963 and February 1964. Except for the enlargement of Chapter VIII on the basis of further investigation undertaken in the summer of 1964, and the addition of a short concluding chapter, there were no basic changes made when the study was prepared for publication in the spring of 1965.





## PART ONE

### Factors Influencing the Size and Timing of Capital Expenditures by Large Firms

#### CHAPTER 1— METHODS OF EVALUATING INVESTMENT OPPORTUNITIES

This study examines the way ideas for new investment are generated and screened within large corporations. Rate of return calculations are central to the analysis for three reasons:

- (1) They provide large firms with a primary means of comparing the attractiveness of alternative investments;
- (2) they allow the effects of taxation measures on the attractiveness of new investment to be clearly set out and compared;
- (3) they provide, in principle, a means of comparing investment behaviour and the marginal efficiency of investment in various sectors of the economy.

It would be possible to analyze the investment process and the effects of taxation changes on investment solely by reference to the theoretical effects of tax measures on rates of return as indicated by some measure of the marginal efficiency of investment. The purpose of this paper is to provide an empirical basis for an analysis of the actual effects of tax policies. Various chapters of the study will attempt to show which measures of return on investment are usually employed, which sources of information are drawn on for investment decisions, what reliance is placed on rates of return calculations, what range of investment opportunities is faced by large firms, and what factors affect the

timing and size of expenditures undertaken. This outline of the decision-making process will then be used as a framework for the assessment, in the second part of the study, of the effects which various tax measures have on investment.

This chapter has three parts. The first outlines the essential characteristics of the various investment rules in common use; the second contains a catalogue of the formal investment criteria employed by large firms; the third explains how the rules are applied.

### SOME METHODS OF COMPARING INVESTMENT OPPORTUNITIES

There is an almost infinite variety of ways of assessing investment proposals. One of the major difficulties involved in comparing the investment behaviour of different firms and different industries is posed by the variety of assumptions (usually unspecified) on which rate of return calculations are based. One of the aims of this study is to put at least some of the more common investment rules on a standard basis of comparison. The rules will be divided into several basic types, with some attempt being made to explain the differences between the types. The methods described below are not mutually exclusive categories into which all the investment rules employed can be put, although on certain assumptions most methods can be approximated to one of these basic types.

#### Gross Rate of Return, or Gross Payback Period

This method compares the change in an average or representative year's gross income with the size of the capital expenditures required to produce the change. If the change in annual income, before allowance for depreciation, taxes, or the cost of funds, were 50, and the initial cost

of the asset were 100, then the gross rate of return would be 50% ( $50/100$ ) and the payback period two years ( $100/50$ ). 1/ The figure used for the initial cost might or might not take account of the incremental working capital (inventories, accounts receivable) necessary to carry out the project. There is no explicit account taken of the number of years for which the gross income will be maintained. The gross rate of return method usually considers only (some of) the changes in direct costs and revenues, although various allowances may of course be made for changes in indirect or overhead costs. For the purposes of the classification, the essential characteristic of the "gross return" is that no explicit account be taken of depreciation, taxes, or the cost of funds.

#### Net Rate of Return on Capital, or the Net Payback Period

This is the most heterogeneous group of procedures, since firms may adopt a variety of definitions of net income for use in assessing projects. The mechanics of the method are similar to those of the gross rate of return method. The rate of return is some net income figure over some measure of capital required, while the related payback period is the initial capital requirement divided by some net income figure. Any application of this method requires that some explicit assumptions be made about:

#### INCOME TAX RATES

In most tax systems the net tax payable on a particular incremental project is not likely to be a stable percentage of annual gross income. For one thing, there may be different tax rates applicable to different portions of the firm's net income. A more general cause of tax

variations is the fact that size and timing of the depreciation charges against taxable income do not vary directly with the revenues produced by the investment.

### DEPRECIATION

The depreciation charge used may be that which is allowed for taxation purposes, that which is used in the firm's accounts, or that which is thought to represent the obsolescence and deterioration of the asset in use. The assumptions made about depreciation may or may not be consistent with those made about taxes.

### THE STABILITY AND DURATION OF COSTS AND REVENUES ATTRIBUTABLE TO THE PROJECT

The method requires that the assumptions about taxes, depreciation, and the stability and timing of gross revenues be such as to produce a single representative annual net income figure for the project. Some firms use the effect of a new project on net income as recorded in the financial statements (for one or a number of "representative" years) as the measure of net income. Other firms may make an estimate of the change in annual direct costs and revenues and then apply some notional depreciation charge and tax rate to derive a net income figure. Firms using this method may or may not subtract some charge for the cost of funds when computing the net income. The cost of funds used might be either a market borrowing rate or a lending rate, either long or short term, or some weighted measure of the costs of debt and equity funds for a corporation raising new capital.



There are also several ways of defining the capital investment figure to be used in the calculation. Some firms use an average (or a single "representative" year's) change in the book value of assets employed (both fixed and working capital). Others use the initial cost of the assets (perhaps including working capital), possibly dividing by two to obtain a measure of the average size of the investment.

#### Cash Flow Payback

The cash flow payback period is the length of time it will take the expected net cash inflows (cash receipts minus cash payments) to equal the initial cash outlay for the necessary assets. Anticipated tax payments are almost always considered; depreciation, which, of course, is not a cash outlay, is not brought into the calculation. An interest charge on the "cash deficit" may or may not be included as one of the cash outlays during the payback period.

#### Discounted Cash Flow Procedures

There are two main variants of discounted cash flow analysis. The present value method discounts all anticipated cash payments and receipts by an established target rate of discount. The internal rate of return method finds the interest rate which will make the present value of expected receipts equal to the present value of capital and operating costs. For most patterns of income and outlay these two variants will rank projects in the same order of preference.<sup>2/</sup> Both methods usually consider all cash costs and revenues associated with a project, with the exception, in most instances, of interest charges. Usually the target rate of return used for discounting is intended to cover the entire cost

of funds, so that interest payments are not considered separately among the cash outflows. Some firms using the internal rate of return method include interest charges among the costs, in which case the yield calculated must be interpreted differently. All other costs, such as working capital requirements, repairs, and both initial and supplementary capital expenditures are included as cash outflows, while the terminal scrap value and remaining working capital are considered as cash inflows at the end of the project's life. Both discounted cash flow methods differ from the cash flow payback method in that all estimated costs and revenues must be dated. Thus it is necessary to make explicit assumptions about the length of time for which the project will continue to produce revenues, and the amounts to be produced at each stage of the life of the investment.

The present value method and, in general, the internal rate of return method cannot be applied without some assumptions being made about the appropriate target rate of return. The rates actually used vary from the short-term lending rate up to some very high rates taking account of risks of failure and difficulties of obtaining incremental funds.

The discounted cash flow techniques will only produce consistent results if the "appropriate" target rate of return is used. For a few very liquid firms the appropriate rate from the point of view of management (but possibly not the shareholders, who might invest elsewhere to obtain a higher rate of return) might be that which could be earned on a portfolio of financial assets (of a riskiness equivalent to that of the investment project) over the relevant time period if the funds were not tied up in the investment project. <sup>3/</sup> For other firms continuously raising new funds externally, the appropriate measure would be some weighted

measure of the cost of funds. For firms borrowing at one time and lending at another, the appropriate rate would presumably vary from time to time, assuming that the lending rate is not equal to the cost of raising new funds.

The term "appropriate" is not used here in a normative sense, but only to indicate what rate of discount will produce a consistent ranking of investment opportunities for a firm whose goal is to maximize the present value of expected future profits. <sup>4/</sup> Some firms make allowances for risk by setting a cut-off rate of return, or discount rate, higher than their cost of capital or opportunity cost of funds, while others adjust cost and revenue estimates to account for the possibility that the results may be unfavourable. <sup>5/</sup>

#### Comparison of the Techniques

On certain very restricted assumptions all of the four types of method described above will rank projects in the same order of preference. If all projects have the same length of life, the same time pattern of receipts, the same proportion of assets and revenues subject to various depreciation allowances and tax rates, the same scrap value, and there is no capital rationing, then equivalent standards can be formulated for application by each of the four methods. Table I on pages 10 and 11 presents some examples of equivalent standards based on certain assumptions. If one (or more) of the assumptions is broken, the different methods will not rank projects consistently and with any given set of standards will indicate the acceptance of different projects.

Gross rate of return rules are the simplest to apply and require the fewest explicit estimates of income and expenditure. Discounted cash flow methods require the largest number of estimates. The methods which involve the fewest estimates contain the greatest number of implicit assumptions, and will therefore produce consistent results only as long as the assumptions about equal annual revenues, tax treatment, working capital, and capital rationing are met, so that the simplest of the payback and gross rate of return procedures produce less consistent ranking of projects than the discounted cash flow procedures. "Less consistent" ranking in this context means that unless the estimates made under the discounted cash flow procedures are less accurate than the fixed estimates implied by the assumptions of the simpler procedures, the discounted cash flow procedures will more consistently select the higher return projects from any given group of investment possibilities.

The greater consistency of the discounted cash flow procedures in the treatment of a variety of projects has been the main reason for their adoption during the last decade by a substantial number of large firms. Although there was some normative literature recommending the adoption of these techniques prior to 1950, 6/ only since that time have management and accounting texts and journals swung heavily in their favour. 7/

The provisions governing corporation income tax are among the factors which the simpler forms of payback or rate of return analysis assume to be constant. Thus tax rates and depreciation provisions may change greatly without there being any change in the required gross rate of return or gross payback period. The net rate of return and net payback period methods "take account of" 8/ tax rate changes which are assumed to

be applicable for the life of the project, but are unlikely to take account of changes in depreciation provisions. Cash flow payback analysis takes account of tax changes which affect the amount of taxes paid during the payback period, but does not take account of changes in the timing of cash flows within the payback period or any changes affecting the pattern of receipts after the payback period is over. Discounted cash flow calculations take account of all changes in the size or timing of tax payments if the changes are considered important enough for new tax factors to be introduced into the calculations.



## CHAPTER 1

## TABLE I

COMPARISON OF FOUR BASIC METHODS OF EVALUATING INVESTMENTSA. Terminology:

All figures refer only to the particular project being assessed.

- $I_F$  = Cost of fixed assets (in the case where construction is instantaneous at time  $t = 0$ ).
- $I_{Ft}$  = Capital expenditures made in year  $t$  to provide fixed assets for the project (in case where  $I_F = I_{Ft}$  at  $t = 0$ , then  $I_{Ft} = 0$  for  $t > 0$ ).
- $I_W$  = Working capital requirements.
- $D_t$  = Depreciation charge in year  $t$ , when same charge is made for assessing projects, computing net profit for statement purposes, and estimating the liability for income tax.
- $D_{St}$  = Depreciation charge made in year  $t$  in the computation of net income for financial statements.
- $D_{At}$  = Depreciation charge assumed in year  $t$  for the purpose of assessing the potential return on investment.
- $D_{Tt}$  = Depreciation charge in year  $t$  allowed and taken for the purpose of computing income taxes payable.
- $T'_t$  = Corporation income taxes assumed, for the purposes of investment evaluation, to be payable in year  $t$ .
- $T_t$  = Expected corporation income taxes payable in year  $t$  on income earned in that year.
- $G_t$  = Gross income from the project in year  $t$ .
- $r'$  = Target rate of return used for discounting cash flows on all projects.
- $r$  = Project's internal rate of return—that discount rate which would make the present value of all related cash receipts and payments equal to zero.

B. Assumptions:

To compare the investment rules in the simplest case, the following assumptions will be made.

- $I_{Ft} = 0, t > 0$
- $I_W = 0$
- $D_t = D_{St} = D_{At} = D_{Tt}$
- $T'_t = T_t$
- $G_t = G, t = 1 \rightarrow n$
- $G_t = 0, t > n$

C. Formulae:

Under these assumptions, simple versions of the four rules may be written as follows:

- (1) Gross rate of return =  $\frac{G_t}{I_F}$  or Gross payback period =  $\frac{I_F}{G_t}$
- (2) Net rate of return =  $\frac{G_t - D_t - T_t}{I_F}$  or Net payback period =  $\frac{I_F}{G_t - D_t - T_t}$
- (3) Cash flow payback period =  $\frac{I_F}{G_t - T_t}$
- (4) Discounted cash flow methods P.V. =  $\sum_{t=1}^n (G_t - T_t)(1+r)^{-t} - I_F$

The project's internal rate of return is that value of  $r$  which makes the projects present value (P.V.) equal to zero. If a target rate of return ( $r'$ ) is used for discounting, then projects are ranked according to their net present values.

Continued...

## CHAPTER 1

TABLE I (concluded)

## COMPARISON OF FOUR BASIC METHODS OF EVALUATING INVESTMENTS

D. Calculation of Equivalent Standards:

Using these simple formulae and making certain further assumptions about the values of the remaining variables, equivalent standards may be developed for each of the four investment rules:

<u>Assumptions</u>	<u>Gross Return</u>	<u>Net Return</u>	<u>Cash Flow Payback</u>	<u>Discounted Cash Flow Rate of Return</u>
(1) Gross annual cash earnings equal to 25% of the initial cost of the fixed assets. ( $G_t = .25, I_F = 1$ ). No allowance made for working capital or for interest payments on borrowed funds. Depreciation (for tax and book purposes) equal to 10% straight line. ( $D_t = .10 I_F$ ) Corporation income tax equal to 50% of income after depreciation ( $T_t = .50 (G_t - D_t)$ ) Earnings assumed to last for:				
a. three years ( $n = 3$ ):	25%	$7\frac{1}{2}\%$	5-2/3 yrs.	- 7%
b. five years ( $n = 5$ ):	25%	$7\frac{1}{2}\%$	5-2/3 yrs.	- 6%
c. eight years ( $n = 8$ ):	25%	$7\frac{1}{2}\%$	5-2/3 yrs.	+ 8%
d. fifteen years ( $n = 15$ ):	25%	$7\frac{1}{2}\%$	5-2/3 yrs.	+ 15%
(2) Assumptions as above, except that $G_t = .40 I_F$ . Earnings assumed to last for:				
a. three years ( $n = 3$ ):	40%	15%	4 years	- 25%
b. five years ( $n = 5$ ):	40%	15%	4 years	+ 8%
c. eight years ( $n = 8$ ):	40%	15%	4 years	+ 18%
d. fifteen years ( $n = 15$ ):	40%	15%	4 years	+ 24%
(3) Assumptions as above, except that $G_t = .50 I_F$ . Earnings assumed to last for:				
a. three years ( $n = 3$ ):	50%	20%	3-1/3 yrs.	- 11%
b. five years ( $n = 5$ ):	50%	20%	3-1/3 yrs.	+ 16%
c. eight years ( $n = 8$ ):	50%	20%	3-1/3 yrs.	+ 25%
d. fifteen years ( $n = 15$ ):	50%	20%	3-1/3 yrs.	+ 30%

The four evaluation rules will produce the same accept-or-reject decisions as long as all the above assumptions are fulfilled. A few complicating factors may be introduced (such as working capital requirements) without losing all comparability between the methods, as long as the additional factors are not treated as variables. That is, working capital may be introduced, and new equivalent standards derived; but the standards will only be equivalent if the ratio  $I_W/I_F$  is the same for all projects. More generally, if any of the additional factors are permitted to take different values from project to project, it is impossible to derive a set of targets which would make the four basic types of rate of return rule equivalent to one another.

THE FORMAL INVESTMENT CRITERIA USED BY LARGE FIRMS

The general practice among the Canadian corporations surveyed is to make rate of return calculations at the time when projects are given final authorization. This approval is usually given just before the project is to be undertaken. Before even a rough cataloguing of approval procedures and rate of return requirements is attempted, it is necessary to warn that in only a certain proportion of the firms could the exact nature of the approved procedures be clearly established. Naturally, if it is not possible to discover how depreciation, taxes, variable income streams, working capital, the cost of funds, and other matters are dealt with, it is difficult or impossible to compare the procedures actually used in different firms. Since, in any case, the relationship between the formal procedures and the operative standards is at best a loose one, the roughness of the classification of formal procedures takes its place as one of many factors responsible for our imprecision about investment standards.

The study of the investment criteria of seventy large non-government corporations, all with assets, net of depreciation, over 90 million dollars as at December 31st, 1963, was based on interviews, correspondence, analysis of forms and procedural manuals, and, in a number of cases, a detailed examination of the documents supporting and describing capital expenditure proposals for sample years. 9/ The techniques themselves, and the ways in which they are used, vary so much among firms that interviews undertaken with officials of sixty-seven of the firms provided the best guide to the nature of the adopted standards. Even so, the established standards are often so ephemeral or of such little concern within the firm that officials interviewed are not familiar with

the techniques employed. Therefore, the rate of return standards listed here do not necessarily provide a reliable guide to the marginal efficiency of investment in the firms which use them. When the rules are put on a more or less comparable basis with respect to their choice of income figures and their treatment of depreciation, the cost of capital and taxes, they can be roughly classified as follows:

#### Gross Rate of Return or Gross Payback

(a) Ten firms regularly use a gross return  $\left( \frac{\text{gross revenue or cost savings}}{\text{initial expenditure}} \right)$  10/ or its reciprocal, the gross payback period, as the basic test for proposed expenditures. All ten firms have gross return requirements of 30% or more for some types of projects, while four mentioned requirements as high as 50% for some types of projects, and others have requirements much lower than 30% for long-lived assets. Two thirds of these firms have a range of payback or gross return standards whose applicability depends on the "degree of risk", the probable length of revenue life, the tax class of the assets, and other factors.

(b) Seven other firms seldom if ever make estimates of the profitability of proposed expenditures, but use a rough measure of payback or gross rate of return when they do. They have no generally applicable standards.

#### Net Return or Net Payback

Seventeen firms use the ratio of net income, after tax and depreciation, to some measure of capital employed as their index of the profitability of capital expenditures. Expressing the income of a "representative year" (net of income tax and depreciation, but before any allowance for the cost of funds) as a fraction of the initial capital expenditure,

the expected minimum for nine of the firms averages 10%. One of these nine firms has a 5% requirement, and one a 20% requirement for "quick approval" items, while the remainder fall in the 9-14% range. Some of the standards were expressed as some form of payback, and have been translated to a rate of return basis for comparison purposes. Of the remaining eight firms, three require that new projects promise to equal or better the rate of return on existing assets, while the remaining five either choose not to reveal their particular standards or have no single rate to represent their standard.

#### Cash Flow Payback

Two firms regularly employ a form of payback analysis taking account of all cash inflows and outflows and measuring the time required for the initial cash outlay to be recouped. Their standards range from  $2\frac{1}{2}$  to  $4\frac{1}{2}$  years. 11/

#### Discounted Cash Flow

Seventeen firms use discounted cash flow or present value assessment procedures as their principal means of evaluating capital expenditures. 12/ The fourteen who indicated the size of their usual required minimum return gave figures ranging from 5 to 15%. The mean figure was about 11%, while the mode was 10% (five firms). Several firms indicated that different cut-off rates were used depending on the type of project with, in general, the higher requirements being associated with projects having a greater range of possible outcomes. The calculations are, in general, applied by discounting all associated cash flows, including tax payments on the expected annual increments to net taxable income. The most common



practice is to use these procedures to find the rate which would equate the present value of costs and revenues, although some firms discount by the required rate of return to find a net present value for the project. Virtually all of the 17 firms have adopted discounted cash flow techniques within the past decade.

### Special Cases

Nine utilities, five of them pipelines, will make any capital expenditures within their service areas which will provide a return on the rate base equal to that approved by their respective regulatory bodies. The most common notional rate adopted by the firms was  $7\frac{1}{2}\%$  on the asset base.

Four retail firms base their major expenditures on the requirement that a proposed store should promise, within a specified period, a certain sales revenue per square foot, or occasionally a certain profit margin on sales. The relationships between these calculations and requirements of a certain return on capital invested are not usually made explicit.

For the remaining four of the seventy firms there was not enough information available to allow classification; in one case because the firm did not wish to reveal anything about its capital expenditure planning, and in the other cases either because the firm was too new for established procedures to have been adopted or because adequate interview and questionnaire evidence was not available.

The foregoing description of procedures refers to the standards in operation when the research was carried out, between June 1962, and September 1963. It is to be expected that the number of firms using

discounted cash flow standards will have continued to increase. Several officials indicated that discounted cash flow procedures were being increasingly used to supplement the formally established rate of return standards. The process of change to which both informal and established procedures are subject has obvious implications, for the establishment of formal assessment techniques has led to steps being taken to provide the data necessary for their full-scale application.

Some mention should be made of the distribution of procedures by industry and ownership of the firm. These comments are intended to supplement the more detailed information contained in Table II on page 18. Predominant among those firms which have adopted discounted cash flow techniques are firms in the petroleum industry and firms with larger associates in other countries. Of the 70 large firms, 55% are controlled outside Canada, while of the 17 firms making general use of discounted cash flow procedures 75% are foreign controlled. All of the eight largest oil companies are controlled outside Canada, and six of them use discounted cash flow techniques. Even if the oil companies are eliminated, the percentage of foreign-controlled firms using discounted cash flow techniques remains somewhat higher than that of firms controlled in Canada. There is little other relationship between the types of assessment procedures employed and the industry in which a firm operates. There is a slight indication that discounted cash flow procedures are more intensively used in industries where the duration and time pattern of sales revenues are subject to considerable differences from project to project. Similarly, there is a tendency for some firms with strong or sheltered market positions, making products not subject to rapid

obsolescence, to employ gross return or payback standards. An increase in investment standards, or in the strictness with which they are applied, has taken place in several firms after periods of what was later thought to be over-expansion, or when market conditions have become more difficult. On the other hand there were no examples discovered where firms have explicitly lowered their investment standards so as to increase the flow of new project ideas, although several firms have suggested that they have "had to take a lower return" on some projects when cash generation had been large relative to the anticipated profitability of investment. (See also "Cyclical Influences on the Effective Standards" on page 31.)

Since this study is primarily about decision-making within large firms there has been little data systematically collected referring to the investment procedures in smaller firms. What information there is suggests that fewer of the smaller firms have specific investment criteria. In addition, small firms that do have investment rules apply them to a smaller fraction of their total expenditures. For example, among the responders to the Tax Commission's questionnaire on capital expenditures, 37% of the 16 respondents with assets under 25 million dollars said that they employed target rates of return or minimum payback periods, compared with 75% of the firms with assets between 25 and 90 million, and 80% of those with assets over 90 million dollars. There was not enough evidence available to allow the classification of procedures by types and rates of required return for a representative sample of firms with assets below 90 million. However, it was clear even from the unrepresentative sample of firms surveyed that smaller firms tend to use rougher measures of profitability, and to have less reliable data. The smaller firms more

## CHAPTER 1

TABLE II

## A COMPARISON OF THE RATES OF RETURN STANDARDS USED BY LARGE FIRMS

(a)	(b)	(c)	(d)	(e)	(f)
Industry Group	Number of Firms	Type of Rate of Return Standard 1/	Number of Firms with Majority of Voting Shares Held Outside Canada 2/	% of Expenditures Assessed (according to Uninterpreted Questionnaire Responses) 3/	Mean Equivalent d.c.f. Standard and Range for the Industry 4/
Mining & Smelting (Iron, copper, silver, lead, zinc, uranium, nickel)	7	2 d.c.f. (10-15% range) 2 net return 3 gross return or no established standards	4	100% (1 firm)	Mean 9-11% range 6-16% (3 firms)
Primary Metals (Steel and aluminium)	6	2 d.c.f. (10-15% range) 2 gross return 2 net return	3	95% (1 firm)	Mean 11-20% Range 6-25% (4 firms)
Oil	12	6 d.c.f. (8-20% range) 3 net return 3 gross return or no established standards	10	80% (4 firms)	Mean 13-18% range 9-16% (4 firms)
Pulp and Paper	9	1 d.c.f. 5 net return 3 gross return or no established procedures	4	80% (3 firms)	Mean 12-13% range 9-16% (4 firms)
Oil & gas pipelines, and gas distribution	7	1 net return most of the utilities use a notional rate (often 7½%) as a measure of what they are permitted to earn on assets employed	5	70% (5 firms)	
Other Utilities	4				
Retail Trade	5	Projects generally evaluated on the basis of sales revenue per sq. ft. or per dollar invested	2		
Manufacturing and Other	20	6 d.c.f. (5-10% range) 4 net return 8 gross or no established procedures 2 cash flow pay-back (2½-4½ year range)	11	85% (11 firms)	Mean 11-15% range 6-25% (16 firms)
All Industry Groups	70	14 d.c.f. 17 net return 19 gross or no established procedures 2 cash flow payback	39	80% (25 firms)	Mean 11-15% range 6-25% (31 firms)

1/ The "gross return, or no established standards" also includes firms for which only imperfect information was available. This classification change explains the discrepancy between the totals in column (c) and those in the text of Chapter 1.

2/ See Appendix III for further analysis of the investment procedures of these firms.

3/ Interview evidence indicates that all these estimates are high. As an extreme example, an examination of the appropriation requests for a sample year in one firm revealed that fewer than 5% (by number) and less than half (by value) of the capital expenditure proposals had had any estimates of earnings attached to the proposal. The questionnaire submitted by this firm to the Taxation Commission indicated that rate of return calculations were made for 100% of the firm's capital expenditures. In none of the firms interviewed in depth was there evidence that earnings estimates were made for more than 80% at most of the firm's expenditures, yet more than half of the firms responding to the related question on the Tax Commission's questionnaire said that they made rate of return calculations for more than that proportion of their capital expenditures. See Appendix I for further discussion of this point.

4/ The figures in this column should be treated with the greatest caution. They do not provide any basis for inter-industry comparisons of the marginal efficiency of investment. The calculation procedure was as follows. The conversion of each firm's announced standard(s) has been made according to the simple formulae presented in Table I, with the additional (very restrictive) assumptions that each project produces level gross annual revenue for 10 years ( $G_1=G_2=\dots=G_{10}$ ;  $G_t=0$ ,  $t > 10$ ), depreciation is 10% of  $I_p$  for all purposes ( $D_t = D_{St} = D_{At} = D_{Tt} = .1 I_p$ ), and income tax is 50% of gross income minus depreciation ( $T_t = T_t = .5 (G_t - D_t)$ ). The "mean figure" has more than one value because some firms have more than one minimum standard. The lowest estimate of the "mean" is the mean of the d.c.f. equivalents (for the project defined above) for the lowest minimum standards for each firm. The higher estimate is the mean of the highest minimum standard for each firm. The "range" for each industry is the range between the d.c.f. equivalent of the lowest minimum standard of any firm to the highest minimum for any firm in the industry. Since the industry "means" and "ranges" are constructed on the basis of a single project which is not only not typical, but is less typical of investment in some industries than in others, the figures may not be used for meaningful inter-industry comparisons.



often consider themselves forced by competitive conditions to make capital expenditures without regard to rate of return calculations. Thus a style change by a large and dominant firm may lead to defensive investment by the smaller firms without specific estimates being made of the likely reductions in revenue if the expenditures were not made.

#### THE APPLICATION OF INVESTMENT RULES

The most obvious danger in using rate of return requirements as measures of the marginal efficiency of investment in a firm is that the established rules may not generally be used in making investment decisions. If many capital expenditures are not subjected to rate of return requirements, the possibility arises that the indicated rates of return on the projects for which calculations are made are not at all representative of rates of return on all other expenditures. The possibility that computed rates of return may be misleading is greatest in firms which subject only a small fraction of their expenditures to such assessment. Unfortunately, it is difficult to get reliable information about the proportion of capital expenditures for which the rate of return calculations are made, aside from any difficulties involved in interpreting the calculations themselves. For the few firms whose records were studied in detail it was possible to assess the amount and relative importance of the expenditures which were subjected to rate of return calculations, but for most of the 70 firms the information is far from satisfactory. Many of the officials interviewed had no very clear impression of the prevalence of rate of return calculations, although the examples to follow show that the executives are generally aware of the types of expenditure for which calculations are made. There



is a further possible source of information. The mail questionnaire sent out by the Taxation Commission 13/ in the spring of 1963 asked respondents to specify the proportion of their capital expenditures for which rate of return calculation are made. Although 51 of the 52 large firm respondents replied that they had rate of return standards, only 21 provided an estimate of the fraction of expenditures assessed. Table III tabulates the answers to the question, and the related footnote (footnote 3) suggests that the estimates of the proportion of expenditures assessed, which average 85% for the 21 firms, are higher than the actual proportions. Interview evidence also indicates that the firms which did not answer that question on the Taxation Commission's questionnaire make less use of investment rules than the firms which did answer. As for smaller firms, the Taxation Commission questionnaire and an extensive series of interviews with large and small firms both indicate that the smaller firms are less likely than are large firms to have rate of return standards, while those that do make rate of return calculations do so for a smaller proportion of their expenditures. 14/

On the basis of the available evidence, it is not possible to be precise about the aggregate value of expenditures for which rate of return calculations are made. This lack of precision in itself may not matter very much, as the rest of this chapter and chapter 2 will demonstrate that the calculation of a rate of return at some stage in the investment process does not indicate whether or not the rate of return so calculated has anything to do with the actual decision to invest. For the present it is perhaps best to make a rough assumption that the 70 large firms subject approximately half their total expenditures (by value) to rate of return calculations. The proportion is somewhat

higher for expenditures involving a move into a new product or a new market area.

The following examples will help, in a rough way, to provide some information about the types of expenditures for which rate of return calculations are made, and the degree of reliance which is placed on the results of the calculations:

\* A large manufacturing firm with a wide range of products and processes divides its capital expenditures into two main classes. Class I projects are those for profit improvement, including items often referred to in other firms as "cost reduction" projects. These projects are divided into three types: minimum risk, on which a 25% return (average annual gross return over initial capital cost) is required; intermediate risk, on which a 30% return is required; and high risk projects requiring a 35% return. There are also several types of Class II expenditures:

- (a) For maintenance of existing capacity: "to maintain intact the company's productive capacity";
- (b) for improving the quality of the product: "to maintain the company's market position";
- (c) to meet legal requirements: "such things as putting in sewage systems when so required by municipal law";
- (d) other: "cafeterias, safety facilities, and investments in prestige".

An official noted that in many cases the Class II types overlap each other, while in many other instances the distinction between Class I and Class II expenditures is hard to draw. Perhaps most difficult of all is the specification of the degree of risk. The official suggested that the capital expenditures were too complex to be easily allocated to clearly defined categories.

\* Another firm reports as follows: "Estimates for capital expenditure projects are required to show increased profits or cost reductions at a minimum specified rate of return on the capital investment for projects coming within the categories of

- (a) new products
- (b) expansion of facilities
- (c) cost reduction

but not necessarily in other cases where return on investment has to be subordinated to other considerations. In this category are

- (d) replacement of obsolete equipment
- (e) production or quality improvement
- (f) safety and welfare requirements."

- \* A large oil company uses discounted cash flow techniques when assessing capital expenditure projects. The rate of return which the company expects to get from a particular project varies both with the type of asset and the risk that a particular project will produce less than the anticipated profit. Even with projects of a particular kind the rates of return deemed acceptable vary with the ancillary advantages and disadvantages of the projects. For example, if a production well is to be drilled in a location thought to be the centre of a possible group of new wells, then a rate of return of 15% may be acceptable, while if the site is on the edge of a producing area, and is less likely to lead to later development, a higher rate of return, perhaps 20 or 25%, will be required.
- \* A manufacturing and retailing organization divides its capital expenditures roughly as follows:
  - (a) Those required to maintain a competitive position - to change the production or distribution facilities so as to provide competitive products at competitive locations. A rate of return is seldom associated with these projects.
  - (b) Replacement expenditures. Some are necessary to maintain the operations at their present level, and for these there is usually no computed rate of return. Others are intended primarily to reduce the costs of operation, and a rate of return is often used to relate the present value of the cost reductions to the present net cost of the replacement.
  - (c) Expenditures to increase capacity. Each project of this type is required to show an anticipated return of the appropriate size. What "appropriate size" may be taken to be varies sharply from time to time. For example, an investment in a new retail establishment was expected a few years ago to promise an after-tax return of 8% on the capital employed before it would be approved; at the present time the same return cannot feasibly be expected, and "competitive pressures" have led the firm to accept a substantially lower anticipated rate of return on retail establishments.
- \* A manufacturing plant in a low profit industry will not make small expenditures (under 100,000 dollars) unless they promise a two-year payback (gross). For the larger expenditures (several million dollars for a new plant), they will accept a payback up to 8 or 10 years in length.
- \* A manufacturing firm uses discounted cash flow methods to analyze and compare competing capital expenditure plans. An official emphasized that a decision to make any particular capital expenditure requires an evaluation of all the various effects which that particular expenditure will have on the rest of the firm's operations. Since many of these effects are too diffuse to be accurately measured, they cannot enter into rate of return calculations.

The company, therefore, uses the calculations as one of a number of measures of desirability rather than as the means of deciding what capital expenditures will be made.

- \* A large manufacturing firm has a profit goal measured in terms of average expected annual profits, after depreciation but before tax, as a percentage of initial capital invested. These assessments are not used as rules for indicating which proposals will be accepted, but merely provide a way to ensure that officials who make proposals are prepared to make estimates of the amount of profit that the project will produce. "A firm would be foolish if it were to rely on precise standards for measuring investment opportunities", said a senior officer. He explained that projects seldom produce the rate of return they promise, since the costs are frequently more and seldom less than their estimated values, while the reverse is true of revenue estimates. In addition, the company is often willing to accept an anticipated return below the target in order to protect its competitive position.

From the above examples it should be clear that for most firms there are several types of expenditure which are in general never subjected to rate of return calculations. Among the most important of these expenditures are outlays to make certain replacements and others to change product quality. The amount of investment embraced by these categories, and the other "non rate-of-return" categories, varies considerably from firm to firm. Chapter 2 contains a more careful analysis of the types of expenditure for which rate of return calculations are made. Some of the inter-firm variations are related to the type and age of the industry in which the firms are operating, and some to differences among firms in the ways in which they measure the results of past operations and the efforts they make to predict the future. Table II shows how the usage of rate of return procedures varies from industry to industry, although the information it contains should be treated with considerable care. There are some inter-industry differences which can probably be traced to the fact that officials in an industry tend to discuss problems together, and to read the same technical



and trade journals. Thus some industries make substantially greater use of more refined assessment techniques than do others, and an examination of the technical journals in the various fields provides at least a part of the explanation. 15/ Undoubtedly the difficulties and importance of accurate prediction of future costs and revenues vary considerably from industry to industry, and this, too, would have an important influence on the seriousness with which rate of return calculations are regarded.

The object of this study is to analyze the way expenditure decisions are made rather than just to establish the frequency with which various kinds of techniques are employed. A secondary objective is specifically to assess the importance of rate of return calculations to decisions as they are presently being made, and to establish what effects a given change in a project's expected rate of return might have on the decision to invest. The logic of the study therefore demands that we ascertain not only the kinds of investment rule that are employed in the preparation of "appropriation requests", 16/ but also the importance which the rate of return calculations made might have on the investment decision.

The remaining pages in this chapter examine in detail some of the factors which influence the significance of rate of return calculations. The data presented suggest quite strongly that the rate of return calculations made in many firms neither represent very accurate estimates of the probable outcome of investment projects (Chapter 2 will be concerned with this matter), nor matter very much to the officials responsible for making investment decisions. The conclusion to be drawn from this is not that the rate of return itself is necessarily unimportant, but that



the rates of return actually computed neither indicate accurately the spectrum of investment opportunities faced by the firm nor demonstrate the limits to the accuracy of predictions of future costs and revenues.

#### When Calculations Are Made

In some firms it is clear from the timing of the rate of return calculations that they are performed too late in the decision-making process to have any significant bearing on the decision itself. If it were seen that the making of profitability calculations seldom if ever changed the course of advance of project proposals, this might be taken as partial evidence that the procedures were being applied late in the decision process. In one firm, an examination of all the appropriation requests submitted over a period of a year showed that without exception they had been approved. The company's assessment techniques were not applied at any stage before the submission of the appropriation request. The case is an exceptional one, but it serves to illustrate a situation which exists to some extent in almost all the firms studied.

#### Division of Function of Management

One of the reasons for the late and rather formal application of profitability criteria is that the assessment techniques are often the tools of financial management, while the project proposals usually are developed in the operating or sales departments. This frequently gives rise to different views in various departments of the nature and purpose of the assessment techniques, and creates discrepancies between the approved procedures and those actually in use. In one firm, the form designed for the presentation of the costs and revenues of a capital

expenditure proposal, and officially recommended for that purpose, has in fact never been used by the operating divisions. In another firm, a financial official was of the view that a majority (by number) of the capital expenditure proposals were subjected to rate of return analysis, and other financial officials consulted were of the same opinion. An examination of a sample year showed that fewer than 5% of the appropriation requests had any estimates of savings attached.

Numerous interviews with production officials showed them to be unaware of the various factors supposedly to be taken into account in the assessment of projects. Sometimes the operating officials are totally out of sympathy with the established procedures for evaluating investment opportunities. The size of the gulf between the "financial view" and the "operating view" of investment procedures varies considerably from firm to firm and industry to industry. In some activities (the drilling of production wells for oil and gas is an example), the use of discounted cash flow procedures is viewed as the basic means of making decisions, and the operating officials would be surprised to have their procedures described as tools of financial management. But in the many other firms described by their financial officials as "sales oriented" or "production oriented", the profitability calculations are regarded by the operating officials as artificial tests which are complied with only after the feasibility of the projects has been established on quite independent grounds.

- \* An official described his job as one of gaining the acceptance of operating management of rate of return tests as valid measures of the desirability of individual projects. He said that the current view within operating management was that rate of return calculations were simply the sort of thing that had to be done in order to satisfy the financial department and that they were not at all the basis on which the actual decisions were made.

This situation appears to arise quite frequently in firms where the establishment and maintenance of investment criteria have been made the responsibility of officials whose primary concern is the application of financial checks and controls. Very little evidence of a difference of viewpoint between financial and operating officials could be found in firms where some measure of profitability is used as a means of measuring the success and of setting the compensation of divisional managers. In such instances, the operating and financial officials at the lower levels share a common desire to meet the profitability tests. In these cases, the difference in view arises between those establishing the tests and those expected to meet them, as the officials establishing the tests are always concerned to reduce the number of ways in which the tests could be met at the expense of what are thought by higher management to be the longer run objectives of the firm. One of the measures of the way in which formal assessment procedures are regarded by the members of operating management is the proportion of expenditures which are treated by these methods.

The Application of Different Effective  
Standards at Different Levels of Management

The fact that precise rate of return measures are not used until fairly late in the decision-making process does not in itself invalidate the rate of return as a measure of the attractiveness of the projects. But if the established measures are to be considered indicative of the importance attached to the project by the firm, it is necessary that the informal balancing procedures applied at the

initial stages produce roughly the same results as the established measures. Reliable evidence on this score is not easy to obtain, and once again there are considerable differences among firms. Nevertheless, there is a substantial weight of evidence suggesting that the effective standards applied at the earlier approval levels are often not equivalent to those applied higher up, and in general are rather more stringent. The reasons for this are several. To begin with, there are considerable pressures on employees, notwithstanding official policy to the contrary, leading them to put forward only those proposals which are reasonably sure of gaining acceptance. Sometimes these pressures can easily be related to the attitudes of senior officials.

\* "For a lot of projects the studies are made at a lower level, at the superintendent's and plant manager's level, and a lot of these things that get started down the line stop right there. I never see them .... They don't bother me if they see this thing is not shaping up to where it's going to be a profitable type of thing to do. If it turns out that it's just something nice that somebody thinks he'd like to have, then it will just not stand up, and it's failed for that reason."

Q: "Are the projects which fail at a lower level than your own usually rejected because they don't show an adequate profit?"

A: "That would be one of the main reasons."

Q: "What standards do they use of the adequacy of profit, or are there none firmly established?"

A: "I couldn't answer that, other than to say again, as a general rule, that if a project is just going to break even or yield something in the way of 10 or 15%, it will be a very 'iffy' proposition."

Q: "Are there very many of these 'iffy' propositions that get to you?"

A: "Not very many get to me... as I said before, our people are not foolish or given to any starry-eyed ideas about what makes this business tick."

It seems reasonable in conditions such as these that the standards applied at the lower levels are going to be at least as conservative as those applied by senior management.



- \* Another firm was disturbed by the lack of projects of a marginal nature being sent in from their various divisions, and recognized that this was a not unlikely consequence of their policy of judging divisional managers not only on the rate of return achieved but also on the rate of growth of the achieved rate of return. Under these circumstances, it is unlikely that divisional managers will suggest projects which do not promise a return higher than that presently achieved, whatever may be the officially established cut-off point.
- \* As a measure of the conservatism of his subordinates, a division manager in another firm noted that of all the projects he had gone over, there had only been one whose actual payback was less than that estimated on the appropriation request. He said that one of his main missions was to fight this conservatism and thereby to generate a larger number of projects with a satisfactory return.

In addition to the influence of particular success standards or senior management attitudes which lead operating officials to suggest only relatively high rate of return projects, there are two more general factors inclining junior management to conservatism. On the one hand, there is the obvious psychological point that people do not like their suggestions to be refused, which leads junior officials to recommend only those projects which they think likely to receive approval. Since in many cases the penalties (which are usually not explicit) for having a marginal project refused are greater than the advantages of having an additional project accepted, proposers are inclined in cases of doubt to defer a project rather than risk its rejection. Several plant or division officials responsible for the generation and early screening of proposals noted that during most phases of the business cycle they have enough to do preparing the proposals which are attractive without bothering with projects whose chances of success are not great.



- \* "In the present situation, where we have involved ourselves in a very substantial investment programme, we've got to be awfully careful of what we are proposing in addition; so I'm not going to recommend something unless I'm sold that it's really good for the company under present conditions."

Others emphasized that, even when pressures were not extreme, they consider it a waste of resources to gather together the supporting data for an appropriation request which might be rejected. A co-ordinating official in a manufacturing firm reported:

- \* "Most of the projects that we get involved with, we look at first of all and determine whether they are good things or not. We don't do a lot of work on something that might end up in the discard."

These influences combine to make the standards of acceptability stricter at a lower level than at the senior level. There are, however, at least two countervailing forces. First, there are within most of the large firms certain capital expenditures which can be made by various functional officials without reference to higher authorities. In cases where the junior officials are not directly responsible for the rate of return on the assets under their control, there may be numbers of projects undertaken at the discretion of the junior officials. Secondly, the dangers of forwarding a project with a marginal rate of return may be avoided by including the project in one of the categories not requiring justification on the basis of explicitly estimated rates of return. Even here, of course, most of the expenditures must receive the approval of members of higher management, and the junior officials are still inclined to avoid making any suggestions which are likely to be rejected.

In general it is true for the firms surveyed that the effective standards at an earlier level of project generation are more strict than those officially established. Since these standards are generally more informal as well, there is no good reason for supposing that they can be accurately represented by inflating the rate of return requirement by a certain proportion. The net result, in any event, is that there is a distinct absence of projects, at the appropriation request stage, promising returns at or near the margin of acceptability. For example:

- \* One firm has an established payback rule which varies with the expected life of the asset. A senior operating official was asked what effective rate of return standards were applied at lower levels in the firm. He replied that nobody would bother with anything promising less than a 30% gross return (which is, under most assumptions about revenue life, a conservative approximation to the formal criterion), having developed a view that higher management would seldom look with pleasure on anything promising a lower return. He noted that there were obvious exceptions to this, particularly in the case of expenditures needed to maintain quality, on which no rate of return requirements were laid. A less senior operating official said that none of his subordinates would normally bother submitting a project to him unless it promised a 40% gross return. An examination was made of the support data for two hundred appropriation requests (each over 1,000 dollars) covering a sample period's operations. More than one quarter of the appropriations were for routine building maintenance. For only 43 of the appropriations were there estimates made of the gross return. For 42 of the 43, the mean estimated gross annual cost saving was 150% of the initial expenditure, while for 30 of them it was over 100% for each project. In only four of the 43 cases was the estimated gross return less than 50% and in two of these there were imperative reasons for the outlay independent of the cost savings.

#### Cyclical Influences on the Effective Standards

A subsequent section will describe the year-to-year changes in the factors affecting the setting of annual budgets. In addition to these cyclical variations in budget pressures, there are some cases of informal

changes in the effective rate of return standards applied at the appropriation request stage. These changes in the rate of return looked for may be due to:

#### CHANGES IN REALIZED PROFITS

In some firms the operating officials noted that they would not submit projects in years of low profits unless they promised a faster payback than was usually required. For example, one executive reported:

- \* "In 1960, our rules for capital expenditure were reviewed and tightened.... The chief object of the decision was to aim for a higher over-all return on new investment to offset the profits squeeze resulting from increasing costs."
- \* A senior engineering official in another firm noted that a mid-year decline in profit margins on one of the company's main products had caused marginal investment projects to be held back. He was not able to make an estimate of the amount by which investment would have increased had the profits remained at their normal level.

Financial officials were more usually of the opinion that rate of return standards do not vary with the level of current earnings. Cyclical influences on the required rate of return were noted mainly in firms using gross payback standards and usually by operating officials who supposed that in times of low profits a project would have to show a higher return if it were to gain approval.

#### CHANGES IN CASH FLOW

An example from a processing firm:

- \* When the cash forecast indicates that the company's bank borrowings are going to increase, the plant managers are told at their quarterly meeting that they should refrain as far as possible from suggesting expenditures which do not promise good and immediate

earnings; this applies to new capacity as well as replacement. Conversely, when funds are flowing fast, the company is fairly amenable to spending suggestions. The president noted that this policy did not have to be dictated from the top; when profits are high he automatically finds himself faced with a larger volume of appropriation requests, presumably because his policy has become well known to lower management.

#### CHANGES IN MONETARY OR FISCAL POLICY

For example:

- \* Q: "Do your ideas of what is a good payback vary from month to month?"  
 A: "There's no doubt about it. They vary depending upon what kind of a year we have had. The payback which may look good in one year may not look so good in another year, and that could depend on the government and on the budget."

The influences of monetary and fiscal policies on expenditures are discussed on page 79 of Chapter 3, page 94 of Chapter 4, and several chapters of Part Two.

#### VOLUME OF OTHER PROJECTS BEING UNDERTAKEN

A staff member of a manufacturing firm suggested that heavy current spending decreased the likelihood of additional projects receiving approval:

- \* Q: "Is this an official policy?"  
 A: "No... we have to use our judgment. You can't just say your policy is to quit spending. I say 'throw your ideas in. When they come in we'll look them over' ....We use our judgment in looking them over, and if we want to determine the feeling of the company in this regard, we'll ask them. The senior people are just across the hall, and if they say 'no', then we'll just hold the project in abeyance."  
 Q: "I gather your interpretation of their feeling has been that they don't want anything sent up unless it shows a better return than it would have had to a few years ago."  
 A: "They haven't indicated their feeling, but I know that the company doesn't get involved in a major programme and not closely scrutinize what is going to come next."



Q: "So you just hold things back a little now?"

A: "Well, yes, but I'm not going to hold anything back that I think the company should get involved in. I'm not going to put anything through here that is dubious."

Q: "Have you changed our definition of "dubious" from what it would have been two years ago?"

A: "That could be...."

Q: "Are the people sending ideas up to you affected as well?"

A: "Well ... of course people get the message too. If they find the projects are not going through, then they are not going to be so pushy with other projects."

- \* A divisional manager in another manufacturing firm noted that in the few years prior to 1961 there had been strict payback requirements in his division because of the pressure on the department's capacity to produce new equipment. Almost all the facilities are constructed by the departmental staff, and even though it would have been possible to increase the size of the staff the manager indicated that the costs of construction would have been higher and there would have been subsequent difficulties in reducing the size of the staff when the expenditures had been completed.

Executives describing the variations in the stringency with which tests were applied noted that the projects given closest scrutiny, "when things are tight", are the projects on which anticipated rates of return are not calculated. Within the rate of return category, the expenditures which might be postponed include those for the construction of facilities whose contribution to profit is not much reduced by a delay. Thus the pressures are often best described as a raising of the effective return requirement only on those expenditures for which return calculations are not made or where the timing of completion is not crucial to the project's profitability.

#### The Subjectivity of Profitability Estimates

It will become clear from the discussion in the next chapter of the sources of data for investment decisions that it is often possible to make several quite different estimates of rate of return based on



assumptions of roughly equal plausibility. In these circumstances there is considerable scope for the attitudes of the decision-makers to be reflected in the estimates of costs and revenues and, subsequently, in the indicated rate of profit. In the short run the possibilities for making plausible estimates which align the indicated rate of return with the evaluators' preferences are enormous. In the longer term, however, the chickens come home to roost if systematic efforts are made to relate the results of expenditures to the estimates made at the time the expenditures are approved. The scope for the profitability calculations to display the predilections of the proposer can easily be seen to be related to the range of probable values for the various figures being estimated. Since this range is affected by knowledge of the size and kind of previous estimating errors, the procedures established for measuring these errors will themselves affect the range of plausible estimates. Thus the few firms which have follow-up procedures to measure the discrepancies between cost and revenue estimates and their actual values have found that a more detailed knowledge of past experience allows them to make more accurate estimates. The fact that more accurate estimates are possible means that there is reduced scope for subjectivity in cost and revenue estimates.

### CONCLUSION

This chapter has attempted to show that a detailed knowledge of the way assessment procedures are applied casts some doubt on the significance of indicated rates of return, even in circumstances where they are calculated. Some tentative qualitative conclusions have been presented about the direction of the bias introduced by

certain common features of project evaluation. If the joint influence of these institutional factors in the firms studied must be guessed at, the guess would be that there is a definite tendency for the marginal projects to be reclassified as non rate-of-return expenditures, or presented on the basis of a clearly adequate indicated rate of return, or suppressed on the grounds that the rate of return, as calculated, is clearly too low. Thus the fact that there are few projects advanced showing a marginal rate of return does not in itself indicate a lack of marginal investment possibilities. This matter will be dealt with further in the following chapter, which illustrates the various types of cost and revenue estimates involved in investment decisions.

## REFERENCES

- 1/ The gross rate of return is sometimes taken as the gross income over the "average capital employed", (e.g.,  $\frac{\text{initial capital expenditure}}{2} + \text{working capital employed}$ ).
- In these cases, the indicated rate of return for a given project is higher than if the initial capital expenditure (plus working capital) is used as the denominator, and is not the simple reciprocal of the payback period.
- 2/ For income streams which change sign more than once the internal rate of return rule may produce unreal or multiple solutions. For this reason, as well as for ease of computation, the present value rule is usually recommended in the normative literature, e.g., see H. Bierman and S. Smidt, The Capital Budgeting Decision, MacMillan, New York, 1960, pp. 34-50, or E. Solomon, The Theory of Financial Management, Columbia University Press, New York, 1965, pp. 132-135.
- 3/ The "investment project" is taken to be investment in buildings, equipment, inventories, and accounts receivable, as opposed to investment in securities.
- 4/ In general, there is not a single discount rate that appropriately represents the firm's cost of capital for investment projects assessed at the present time. In theory there is a separate discount rate linking each pair of adjacent periods within the firm's investment planning time horizon. Each of these rates reflects present expectations about the conditions in capital markets and the firm's cash position during a particular future period. In their formal assessment of projects, most firms use only a single discount rate, or a single rate for each risk class of project, using less formal ways of accounting for changes in cash requirements within the investment horizon.
- 5/ Or just that they may differ from their expected values. Most firms favour a stable income stream over one with the same average value but a greater degree of dispersion. This "risk aversion", as it is often called, is often taken account of by making deliberately conservative estimates of uncertain costs and revenues.
- 6/ e.g., Eugene Lodewick Grant, Principles of Engineering Economy, Ronald Press Co., New York, 1930.

- 7/ Joel Dean, Capital Budgeting, Columbia University Press, New York, 1951; E. Solomon, Ed., The Management of Corporate Capital, Free Press, Glencoe, Ill., 1959; H. Bierman and S. Smidt, The Capital Budgeting Decision, MacMillan, New York, 1960; C.G. Edge, The Appraisal of Capital Expenditures, Society of Industrial and Cost Accountants of Canada, Hamilton, 1959; E. Solomon, The Theory of Financial Management, Columbia University Press, New York, 1963.

To the extent that operations research literature has been concerned with new capital expenditures rather than inventory and renewal policy, it has usually involved some form of time discounting. For example, see Kenneth Joseph Arrow, M.J. Beckmann, and S. Karlin, "The Optimal Expansion of the Capacity of a Firm", in Arrow, Karlin, and Scarf, Eds., Studies in the Mathematical Theory of Inventory and Production, Stanford University Press, Stanford, California, 1958.

- 8/ "Take account of" is not intended to mean that the methods adequately represent the influence of the tax provisions on the profitability of investment; the phrase means only that the calculated rate of return will change when the tax provisions change.
- 9/ See Appendix I for an analysis of the procedures used in selecting firms and obtaining information.
- 10/ No allowance being made for depreciation, taxes, or the cost of funds.
- 11/ These procedures were employed by some of the firms classified in groups (1) or (2) above for the evaluation of large or especially significant projects.
- 12/ Another 15-20 firms use these methods occasionally when evaluating large projects or projects where the expected time pattern of receipts is uneven. Several firms use a number of different types of calculation, different members of senior management making their separate judgments on the basis of rates of return measures familiar to them.
- 13/ See Appendix I for a description of the survey methods and coverage.
- 14/ Among the 38 Taxation Commission questionnaire respondents with assets between 25-90 million, 22 estimated a percentage of expenditures assessed in terms of payback or rate of return. The estimates ranged from 25% to 100% of expenditures, with the mean estimate being 74%. Only four of the 27 respondents under \$25 million answered the question, their average estimate being 95%.

- 15/ For example, much of the literature on the development and application of investment evaluation techniques has appeared initially in chemical engineering periodicals, while the chemical industry is one which has more than most others tended to adopt the new techniques as they are developed.
- 16/ "Appropriation request" is a frequently used name for the form submitted requesting authorization to expend funds on a particular project. It will be used in this study to describe all such documents. The term "preliminary appropriation request" will be used to describe any earlier form requesting tentative approval for a project. The level of approval required for either a preliminary or a final appropriation request varies with the size of the project. Once the request has been approved by the appropriate officials (as many as a dozen signatures are required in some firms), design and construction may begin. Expenditures may usually be made without further higher level approval unless the project is likely to cost more than the approved amount. If expenditures are to run over by more than a specified proportion, a "supplementary appropriation request" must be submitted and approved. In many firms the supplementary appropriation requests are in fact submitted and approved after the project itself has been completed.



## CHAPTER 2 — COST AND REVENUE ESTIMATES USED IN INVESTMENT DECISIONS

Investment criteria provide only a framework for estimates of the results of proposed expenditures. This chapter will consider the origins and reliability of the cost and revenue estimates which are the basis for investment decisions. The primary concern is with the sources of information used at the time specific approval is obtained for a project on the basis of an appropriation request. This chapter presents evidence about the confidence placed in estimates by those preparing and using them, the methods used to account for the uncertainty of the estimates, and the success actually achieved in predicting the outcomes of capital expenditures. The previous chapter was concerned only with projects for which rate of return calculations are made. This chapter is concerned with the data used in making all investment decisions, whether or not rate of return calculations are used.

### ESTIMATES OF CAPITAL COSTS

We may perhaps distinguish three basic types of uncertainty involved in estimating the capital cost of a project.

(1) There are doubts about the costs of buildings and equipment which can, in general, be removed by specifying more closely the engineering characteristics of the desired facility. By making certain expenditures on design engineering and process research, it is possible to reduce the uncertainties about the time it will take to construct the facilities, the demands that will be made on the firm's own personnel and equipment, and the cost of contracting to be done and equipment to be supplied by

others. At a certain stage in the planning of some types of projects it is possible to remove all uncertainties of this type by obtaining firm quotations from contractors and suppliers.

(2) There are uncertainties related to possible changes in prices and technology between the time the estimates must be prepared and the time the expenditures are made or firm contracts entered into. The extent of these uncertainties is closely tied to the length of time between the decision to commit resources and the actual expenditures.

(3) Finally, there is another type of uncertainty related to essentially unpredictable events or states of nature affecting the costs of construction. To a considerable extent these uncertainties can be passed on to others by means of fixed price construction contracts, but in the final analysis there must be at least one decision-maker who accepts these uncertainties in the expectation that the return he hopes to receive for doing so will adequately cover any unforeseen outlays. This type of uncertainty is most frequently faced by firms developing natural resources in unfamiliar territory, and by firms building plants embodying radically new technology.

The differences between these three types of uncertainty should not be over-emphasized, as the action taken by planners to account for them does not vary radically from one type to the next. Types (2) and (3) are brought into discussions by executives in order to explain why it is not worth attempting to use precise methods of investment appraisal. All three types of uncertainty are allowed for through a variety of contingency factors, risk premiums, and range estimates,

while the first type is often mentioned in explanation of a two-stage system of project approval. 1/

Within the firms whose procedures were studied in detail, the efforts made to reduce the errors in estimates of the capital cost of new projects are considerable, and this concern is matched by an equally great interest in the expenditures actually incurred. In all these firms a supplementary appropriation request must be submitted if the capital expenditure runs more than a certain specified percentage above the originally approved amount, and in several cases it is also necessary to explain deviations below the approved amount. With such a focus of executive attention on the accuracy of the estimates of capital cost, there are numerous records available which document the discrepancies between estimates and actual expenditures. An analysis of some of these figures must be preceded by a description of the ways in which uncertainties are treated at the time the original estimates are made. It is necessary to distinguish estimates made for the preliminary appropriation request from those made in the appropriation request itself. The following example shows the kind of cost estimates that are typically involved in the preliminary appropriation request.

- \* As a senior official described the relationship between the appropriation request and the preliminary appropriation request, they both amount to an authorization to undertake expenditures, but the preliminary appropriation requests are only expected to be accurate within 20 or 30%, while the final appropriation request is expected to be within 10% in its estimate of the capital cost. The preliminary request is used to avoid the attribution of blame to those presenting estimates early in order to get a project underway. The official said that the company recognizes that some projects are good enough and important enough that they should be undertaken before there is time to do the detailed final estimation work (the estimation process might take as long as one month). He said that once a preliminary appropriation has been approved, a project is sure of getting final appropriation request approval. There have been only rare occasions when projects have been deferred after a preliminary appropriation

request had been approved. The official described the subsequent preparation of the appropriation request as a formal step involving the firming up of the earlier estimates while work on the project itself is underway.

Other firms restrict the use of preliminary approval to projects involving considerable expense for engineering, process development, or perhaps the construction of a pilot plant. In such cases the support data for the preliminary approval may contain a qualitative analysis of possibilities with perhaps a rough estimate of the cost of construction. In the situations examined in detail, preliminary approval procedures were of recent origin, it having been found that the accuracy requirements for the capital cost estimates in the final appropriations requests were difficult to meet. This had the effect of causing either undesirable delays in the generation of proposals or of allowing expenditures to be made on the development of a product or process without higher management having a chance to give specific approval.

- \* An example will illustrate the kind of accuracy which is expected and obtained from the preliminary and final estimates of capital cost. The firm in question uses preliminary appropriation request procedures for large projects requiring a considerable amount of engineering. For a representative sector of the firm's operations there were, during a sample year, ten projects which received preliminary approval. Two of these projects were cancelled (as unfeasible) without a final appropriation request being submitted. After intervals ranging from  $1\frac{1}{2}$  to 11 months (the median being 2 months), the eight remaining projects reappeared in appropriation request form. The estimates of capital cost ranged from 25,000 dollars to 1 million dollars, and their mean differential from their respective earlier estimates was 25% of the preliminary appropriation request, with four final requests being above the preliminary estimates and three below. The differences between the final estimates and the actual expenditures for these particular projects are not available.

There is little additional evidence showing, for groups of projects, the relationships between preliminary and final appropriations requests. There is rather more evidence showing the accuracy of the expenditure



estimates contained in appropriations requests. Table I in this chapter (on page 45) illustrates the degree to which the firms studied have been able to make accurate estimates of the initial cost of investment projects, while Table II (on page 50) analyzes the success of operating cost and revenue estimates.

The figures in Table I indicate a fair degree of accuracy in capital cost estimates, with the actual costs being fairly close to their predicted values. In all cases examined, with the exception of purchases subject to quoted prices or negotiated contracts, there was included in the appropriation request total some sort of allowance for contingencies. Some executives noted a tendency for a pyramiding of unofficial contingency allowances by estimators making sure that their particular estimates would not be so low as to make necessary a supplementary appropriation request. In addition to these unofficial safety margins, most capital cost estimates contain an item described as a "contingency allowance", whose size depends on the nature of the project and usually ranges from 5 to 15% of the explicitly estimated costs. The statistics given in Table I refer to deviations from the estimated size of the expenditures after allowance has been made for contingencies, and so measure only the effect of those deviations for which allowances have not been made. A further reason why the deviations between estimated and actual expenditures do not represent the entire effects of unforeseen events is that it is possible for the officials to make changes in the size and scope of projects in order to keep the actual outlays in line with the authorized amounts.



TABLE I

ESTIMATES OF CAPITAL EXPENDITURES

(1) Example Number	(2) Number of Related Example in Table II	(3) Number of Projects (n)	(4) Type of Projects	(5) Mean Capital Cost of Projects (in '000 Dollars)	(6) Size Range of Projects (in '000 Dollars)	(7) Mean of Actual Expenditures Estimated Expenditures ( $\bar{X}$ )	(8) Standard Deviation $\frac{2}{\sqrt{n}}$ of Actual Expenditures Around Mean ( $\bar{X}$ ) (as a % of Estimated Expenditure)
1	3	12	Expansion and new products. Manufacturing	42	15 - 100	95%	16%
2	1	68	Replacement of equipment, and cost-saving innova- tions in processing plants.	8	1 - 30	100%	11%
3		41	Primarily replacement of equipment; some expansion of capacity in processing plants.	90	10 - 900	100%	15%
4		20)	Same projects as above, divided into two size groups.	30	25 - 50	100%	12%
5		21)		147	50 - 80	100%	18%

$$\frac{1}{\sqrt{n}} \frac{\sum_{i=1}^n (X_i - \bar{X})^2}{n}$$
$$\frac{2}{\sqrt{n}} \text{ S.D.} = \sqrt{\frac{\sum_{i=1}^n (X_i - \bar{X})^2}{n}}$$

$$\bar{X} = \frac{\sum_{i=1}^n X_i}{n}$$

$\frac{1}{\sqrt{n}}$   $X_i$  = Actual expenditure on project  $i$   
estimated expenditure on project  $i$

- \* An engineer noted that one of the chief concerns of management after a project has been approved is to make sure that the cost stays within the estimate. One of the chief reasons for this is that only a 5% discrepancy is allowed before a supplementary appropriation request must be prepared. This "is a sticky business", requiring substantial effort as well as an analysis of the reasons why the expenditures were more than anticipated. The pressures on officials who overestimate the costs of projects are less severe, but still noticeable. For one thing, high cost estimates reduce the chances of the project showing an acceptable prospective return, and, in addition, if an official frequently spends much less than the anticipated amount, questions may be asked about his estimating skill. One of the ways for officials to avoid this particular problem is to use up leftover funds on related projects, many of which are not even envisaged in the original appropriation. This is particularly true for appropriations relating to maintenance items, although it is also true for capital projects. By the same token, if an expenditure is threatening to run over its original allotment, there may be some adjustments made in the way of cutting down the scope of the project. All in all, he concluded, it is easier to build up expenditures than to trim them, with the result that expenditures more frequently run under than over their estimated values.

In summary, the uncertainties about the initial cost of capital projects vary greatly depending on the size and complexity of the projects, the types of assets, and the length of time over which the expenditures are to be distributed. The tight accounting control which is typically kept over fixed asset appropriation and expenditures has led to the development of accurate estimates, although the accuracy is sometimes achieved by changing the specifications of the projects. The uncertainties are usually provided for by adding a percentage contingency factor to the best estimate of specific elements of the total.

#### ESTIMATES OF OPERATING COSTS AND REVENUES

The rest of this chapter will be concerned with the ways in which estimates of the operating costs and revenues of investment projects are made and compared. The first point which may be noted is that firms differ from one another far more in their approach to estimating

operating costs and revenues than in their methods of estimating capital costs. In the case of the purchase of new assets, there must in virtually all cases be an estimate made of the capital cost, since such an estimate is an essential element of the description of the project authorized in the appropriation request. The level of approval required for the project usually depends more on the amount of funds involved than on the type of assets to be purchased. But when one turns to the estimates of the operating costs and revenues of the proposed projects, there is no such uniformity of practice. Since firms differ radically in the vigour of their efforts to estimate the effects of investment on their future costs and revenues, it is difficult to separate lack of concern from inherent uncertainties as explanations of estimating errors.

Bearing in mind that clear boundaries between classes of projects are always difficult and occasionally impossible to draw, the problems of cost and revenue estimation are best presented in the context of the five main types of expenditure where they might be involved.

#### Type 1: Cost Reduction Expenditures

This type of expenditure, which is justified on the basis of anticipated savings in operating costs, involves the fewest possible problems in the estimation of results. Usually the volume and quality of output are assumed constant, although concomitant quality improvements are sometimes viewed as unquantified "plus factors". The savings themselves may be based on reductions in labour, basic raw material costs, process materials, or utility services such as transportation and power. Labour savings involving fractions of men are more problematic than those which

do not, and the savings of materials are only as certain as the price of the material being saved; but beyond this, it is difficult to generalize about the predictability of cost savings. The types of cost savings sought for and achieved naturally vary with the age, rate of growth, and rate of technological development of an industry. Industries with a stable technology and a relatively slow and steady growth rate, such as textiles and food processing, base a far higher proportion of their cost saving expenditures on labour saving than do the industries of more rapid growth and change. In these latter industries (chemicals are an example), the rapidly changing pattern of prices and characteristics of both raw material and products means that more of the cost reducing expenditures are concerned with removing bottlenecks which crop up as the process requirements keep changing, or with conserving materials which might once have been waste but have come into demand. In the more rapidly growing industries, of course, cost reduction expenditures are in general subjugated to the requirements of expansion.

Whatever may be the source of the savings, they are almost always translated into a gross dollar measure of the expected annual savings. For most firms the operative test for this type of savings is that it should be a certain percentage of the cost of the necessary equipment or alterations, with some of the firms taking explicit account of the number of years the savings are likely to exist for, and a small number taking account of the tax treatment of the initial expenditure. Evidence relating to the ease or difficulty of estimating cost savings is difficult to obtain, since most firms do not make systematic efforts to measure the extent to which cost savings are realized. There was some evidence of an informal kind that savings estimates are sometimes made only large enough to justify the project.



\* Reported one senior official to another about a particular instance:  
 "... although the research work indicates the possibility of labour savings of 8 to 10%, the financial justification has been based on an increase of productivity of only 2% .... It is presumed that the lower estimate has been used merely because it is adequate to provide the minimum return on investment required for capital expenditures. I would suspect from the wording of the request that the results of the research work are not sufficiently firm that the division officials would be prepared to stick their necks out by predicting an 8 to 10% productivity increase. I would suggest, however, that a true estimate of the advantages would be considerably in excess of 2% .... It is hoped that we will be instituting follow-up procedures in the near future."

\* A plant manager offered the opinion that for the smaller projects it was easier to estimate the related costs and revenues, principally because they were usually based on equipment for which the manufacturer could provide specifications of the range of operating costs.

From another firm: "Savings", suggested a chief engineer, "are only as good as the follow-up, and the follow-up here has not been very good."

\* Another senior financial official remarked: "An estimate of cost savings can be whatever the costing official wants it to be."

In those cases where continuing scrutiny of results has been undertaken, the cost-reduction type of expenditure has been that most frequently examined. The data presented in Table II must be treated as illustrative of the experience of firms making regular examinations of achieved results rather than of all firms, since it was frequently suggested by officials interviewed that the installation of a regular system of review had had the effect of increasing the accuracy of the estimates of cost savings.

The groups of projects referred to in Table II differ in their nature as well as in the accuracy of their estimates of results. There are considerable differences even among projects of a cost-saving type. For instance, the projects of example 2 in Table II involve primarily labour-saving machinery whose efficiency had previously been assessed in similar surroundings. On the other hand, the type 1 projects in



## CHAPTER 2

TABLE II

## ESTIMATES OF RATES OF RETURN

(1) Example Number	(2) Number of Related Examples in Table I	(3) Number of Projects	(4) Mean Size of Projects (in '000 Dollars)	(5) Size Range of Projects (in '000 Dollars)	(6) Measure of Rate of Return	(7) Type of Projects	(8) Mean Estimated Rate of Return $\bar{R}$	(9) Standard Deviation of Estimated Rates of Return	(10) Mean "Performance", $\bar{P}$ , of Achieved $R_i$ Estimated $R_i$	(11) Standard Deviation of Actual "Performances" about the Mean "Performance"
1	2	42	9	1 - 40	Annual gross cost savings	Savings in labour and materials (almost all type 1) $\bar{Z}$	130%	124%	86%	23%
2	(sub-group of projects in example 1)	29	8	1 - 40	same	Projects based entirely on labour savings (all type 1)	106%	80%	94%	20%
3	1	12	42	15 - 100	Net annual earnings after income tax and depreciation	Expansion and new products. Manufacturing (types 4 and 5)	59%	71%	111%	58%
4		41	19	1 - 80	Annual earnings after (low) depreciation but before income tax	Cost reduction and expansion (high return category) (one half type 1, one half types 4 and 5)	59%	53%	112%	69%
5		45	6	1 - 28	Annual gross cost savings	Savings in labour	106%	80%	77%	31%
6		15	10	1 - 30	Annual gross cost savings	Savings in materials and services	93%	73%	80%	34%
7		16	12	1 - 40	Additions to annual gross profit	Process improvements and expansion to increase quality and quantity of product	137%	112%	57%	37%

$$1/ \quad R_i = \frac{\text{estimated annual earnings or cost savings for project } i}{\text{estimated capital cost of project } i}; \quad \bar{R} \text{ (Column 8)} = \frac{\sum_{i=1}^n R_i}{n}$$

$$2/ \quad S.D. = \sqrt{\frac{\sum_{i=1}^n (R_i - \bar{R})^2}{n}}$$

$$3/ \quad \text{"Performance" of project } i = P_i = \frac{R_i}{R_1}; \quad \text{Mean "performance"} = \bar{P} = \frac{\sum_{i=1}^n P_i}{n}$$

$$\text{Where } R_i = \frac{\text{actual annual earnings on project } i}{\text{actual capital cost of project } i}$$

$$4/ \quad S.D. = \sqrt{\frac{\sum_{i=1}^n (P_i - \bar{P})^2}{n}}$$

5/ The type numbers referred to in this column are the numbers used on pp. 47-56 of Chapter 2 to distinguish five types of Capital expenditure.

example 5 consist primarily of untested innovations, two or three of which produced cost savings more than three times as large as those estimated.

### Type 2: Expenditures for Quality Improvement

This type of expenditure is especially prevalent in industries such as newsprint, where the competition is largely non-price. They have amounted to as much as 30% of some capital budgets, although the average for any industry or group of industries would be considerably less. Some officials suggested that in theory the benefits of even defensive quality improvements could be explicitly measured by estimating what would happen to sales and profit if the quality improvements were not made.

- \* One official reported: "In some of these cases, the rate of return argument really becomes a negative one. If you don't do the project your profit will go down rather than if you do it your profit will go up. That is the case with quality improvements, for instance."

A more common executive comment was that these expenditures were ones which showed a "negative return" but which "had to be made in order to stay in business". For example:

- \* "In the last few years our industry has become very competitive, and this means that we have to do things we wouldn't have considered a few years ago. We have spent a lot of money in areas that do not yield a return, but we have to do these things in order to keep competitive."

Frequently emphasized were the links between expenditures for cost reduction or expansion and those for quality improvement. That is, many items formally described for budget purposes as being of one type actually combined the characteristics of two or more types.

- \* An executive stated that many of his firm's expenditures to increase product quality also resulted in increased output from a given volume of raw material. The system for placing these items in the company's budget is quite simple: all those which promise to equal the company's minimum rate of return are classed as rate of return projects, while all those which do not are placed in the category of quality improvement expenditures.

Since expenditures described as being for quality improvement usually do not show a rate of return great enough to meet the established standards, the appropriation requests for this category of expenditure usually do not include any estimates of the resultant changes in operating costs or revenues.

### Type 3: Necessary Replacements

This is another category of expenditures for which estimates of cost and revenue changes are typically not made. In most cases the item being replaced is an integral part of a larger project whose operations would be jeopardized if the replacement were not made. Some of these replacements are undertaken as part of a regular programme whose size might be related to depreciation allowances or some other measure of capital deterioration. Occasionally, an appropriation request for a replacement item contains an estimate of the loss that would be sustained if the related process were to be halted because of the failure of the item whose replacement was being recommended. In none of the appropriations examined did there appear an explicit estimate of the probability that the item in question would break down. There were, however, a number of appropriations requesting the replacement of equipment which had already broken down. As often as not these formal requests would be prepared after the equipment had been purchased. The strength of the imperatives governing this type of expenditure varies considerably among firms, as do the efforts of senior management to ensure that

"pet projects" do not receive approval under the guise of "necessary replacements". In any case, this type of expenditure is usually justified without any estimates of the effects on costs and revenues. If a replacement involves a process improvement or an increase in output, it is usually considered to be a profit improvement or expansion project rather than a "necessary replacement".

Type 4: Expansion of Capacity to Service Increased Demand  
for Existing Products in Established Markets

Proposals for expansion projects of this type usually originate at the time the sales forecasts are translated into production requirements, and these in turn are compared to the capacity of existing plant. It should not be assumed that the generation of new capacity follows in a mechanistic way the estimation of increased sales. In some types of markets, and for some types of firms, expansion is undertaken in response to actual rather than potential pressures on capacity. To pick the obvious extremes, the construction programmes of power utilities are geared entirely to forecasts of demand, while the facilities necessary to produce certain types (especially the less standardized forms) of capital goods are not purchased until orders have been received. The policy adopted in specific instances will often depend on the consequences of not having facilities to produce the quantities demanded. Where the market is relatively secure (geographical isolation is apparently the key source of such security), order books may be allowed to lengthen and prices eased upward without the immediate consequences being severe. If there are close substitutes, and if market shares are difficult to obtain and easy to lose, then capacity will be more freely provided. Important too are the marginal costs of production when the firm is operating at or near



capacity. If it is relatively easy to buy in semi-finished products, or otherwise to increase output without increasing the pressure on capacity, then the firm will be more likely to take a conservative view of the capacity required.

The preceding discussion ignores the prospects of changes in the structure as well as the total size of demand for the products of the firm. In the case of (some) smelters, pipelines, and hydro projects, fixed assets can be both specialized and long-lasting, on the assumption that there will be a stable or increasing long-run demand for their output. In almost all other types of facility, the prospects of technical change are great enough that the assumptions about the length of life of the demand for the products of any single plant are important to any assessments of its profit potential. The greater are the uncertainties about the future course of demand for products of a type already produced, the more do decisions to expand present capacity resemble those to invest in the production of new goods or for new markets (and the more likely are they to be based on explicit estimates of the expected rate of return).

Type 5: To make New Products or to  
Enter New Market Areas

It is here that most firms consider their problems of estimation to be greatest, and where the methods of treating uncertainty assume considerable importance. It is for this kind of decision that important assumptions about the formation of entrepreneurial expectations must be made; many lengthy chains of interview questions were based on the hope that this sort of evidence might be valuable for assessing the various theories about the way in which expectations are formed and become operative. Unfortunately, most of the stories about the development of



specific projects cannot be told with the detail they require without threatening the confidentiality of the source material. Perhaps, in any case, extreme detail would add merely to the interest of the narrative without furthering the development of the analysis. The reader may be supposed to be aware of the extent to which each major or minor expansion venture is imbedded in particulars, that there are personalities, impulses, accidents, and unique circumstances affecting the progress of almost any project from conception to fruition or discard. Is it any wonder that those who have succoured hundreds of investment proposals in the face of a bewildering variety of human and technical obstacles should often fail to see any underlying unity in the process? It is difficult enough for a researcher, who has had little more than a taste of the complexities, to isolate factors of recurring significance. The analysis presented below will lack the penetrating realism of an account of a single venture, but it is hoped that it does provide in compensation a more balanced view of the relative importance of the various approaches adopted in the development of expansion projects.

The purpose of this section is to explain the presumptions made by firms planning capital expenditures about the operating costs and revenues which will be applicable to the expanded operations. First of all, we must note that there are many expansion decisions, even involving new projects or new markets, which do not involve any quantified estimates of the terms on which new business is likely to be available. These are usually described as "policy moves" undertaken on the basis of a prior and overriding decision that certain efforts should be made to expand the firm's market coverage or product range. It must not be thought that firms making this kind of decision are completely unaware of the likely

consequences of their expansion, for this would leave us without any explanation of the way in which particular expansion projects are selected from the almost infinite variety of conceivable opportunities. In fact, this type of policy-oriented expansion can usually be analyzed in more or less the same terms as expansions which are expected to show an explicit rate of return, even though they are often spoken of in different terms by corporate executives.

The discussion below considers only the estimates of anticipated costs and revenues made at the time a project is presented for approval. If the effective decision to commit resources is made earlier, it may fairly be assumed that it is made on evidence less definite than that available at the appropriation request stage. In the case of complex expansion projects, the decision to undertake the entire group of expenditures may be formally made some time before the appropriation requests for the component parts are submitted. Since in these cases the appropriation requests are approved as a matter of course, the relevant body of data for decision-making is that available at the time the major decision is made. It is this latter body of data, and its assumptions about uncertainty, which will be discussed.

It is a usual procedure in the large firms studied for the estimates of operating costs and revenues to be separately prepared by specialized departments and then combined into an over-all estimate of profitability, either in a department set up for that purpose or in the department making the appropriation request. It will therefore be possible to consider first the estimation of operating costs, then the preparation of revenue estimates, and finally the preparation of feasibility studies using rate of return standards to compare cost and revenue estimates.

ESTIMATES OF OPERATING COSTS

Quoting from a manual used by one firm in the preparation of appropriation requests:

\* "Incremental operating costs for appropriation requests are normally of three types:

- (i) Direct product costs due to the change in the level of production.
- (ii) Increased costs directly associated with the new equipment and facilities.
- (iii) Increased costs of an indirect nature arising from the greater scale of operations."

We will consider the types of incremental operating costs under the same headings:

(i) "Direct product costs". The chief difficulty in estimating costs of the first type is, usually, for the integrated firms studied, the establishment of appropriate interdivisional transfer prices for the materials to be used in making the new products. In some cases there are established markets (such as those for crude oil and logs) which provide a reliable measure of the opportunity cost of goods transferred from one division to another. In these cases, assuming that the firm is willing to buy to cover deficits or to sell any surpluses at the interdivisional stage, the market price for the semifinished product can be and is used as a basis for the cost estimates of the receiving division. In the chemical and petroleum refining industries, the estimation of raw material prices, whether for materials transferred from another division or purchased from the outside, is particularly difficult, since it involves the prediction of the rate of development of other products making use of the same material. The interdivisional pricing of by-products

and joint products is one aspect of the more general problem. Sometimes the assessment of the expansion is based on alternative assumptions about the prices of certain key raw materials. Usually the estimate is single valued, with a small degree of conservatism embodied, although evidence on this point is lacking, since the accuracy of the estimates of the opportunity cost of materials used in a process is apparently not subject to follow-up.

Labour is another input whose price must be estimated; it appears to be general practice to assume the continuation of existing wage rates. Officials who commented on this assumption suggested that this was not so much because they did not expect wages to rise, but because they expected wage increases to be matched by increases in product prices or by future increases in labour productivity.

The confidence placed in the estimates of operating costs was found, not surprisingly, to vary directly with the familiarity of the process or location involved in the expansion. The operating cost estimates were usually described as being "best guesses", occasionally inflated to account for process unfamiliarity. Examples could not be found where the nature of the inflating was explicit enough to reveal whatever principles might lie behind it.

(ii) "Costs directly associated with the new equipment and facilities". The costs related directly to the new plant and equipment would normally include depreciation, maintenance, and a charge for the capital employed. In most project evaluations, however, depreciation and the cost of capital are ignored by those making the explicit cost estimates, since their effects are taken account of by those preparing the estimates of



tax liability and the net rate of return. The estimates for maintenance, insurance, and property taxes are usually based on experience with similar facilities.

(iii) "Increased costs of an indirect nature". These will include any increases in service facilities made necessary by the expanded level of operations. It is only when extremely large and self-contained units of expansion are being considered that the allocation of service and administrative overheads is not a difficult matter. Some firms make a more or less arbitrary charge on the operating departments to allocate the costs of the service departments, while a smaller number bring such a charge into the estimates of the operating costs of new divisions or expansion projects. Some firms make a charge for the investment in service or "non-return" facilities by increasing the required rate of return for expansions whose profit contribution is directly measured. This procedure involves the assumption that each expansion requires an equivalent increase in "non-return" facilities. For the particular projects examined in detail this assumption was not justified. The imprecision of the allocation of overheads to expansion projects is not based on the difficulties of prediction as much as on the difficulty of finding an appropriate index of the use of the service and other non-return facilities. A great deal of concern about this aspect of cost estimation was not evidenced; the view of one official was that the range of possible error was not large enough in most cases to justify any significant efforts to improve the attribution of overhead costs of this type.



THE ESTIMATION OF THE SIZE AND DURATION OF  
SALES REVENUES FROM NEW PRODUCTS OR MARKETS

The sales estimates for new products or new markets are perhaps the most important, as well as the most difficult, of those which are made when an expansion is being considered. In the multiproduct manufacturing firms studied, new markets are assessed frequently, and regular procedures have been adopted. For many of the less diversified resource-based firms, expansion is generally undertaken to increase capacity in existing products, and typically does not involve extensive market research. Since many of the firms which frequently do take on new products or enter new markets do so in a gradual way, the number of key decisions involving totally new market areas or products is a small fraction of the total number of investment decisions. In recent years some of the most important of these decisions have been made by foreign corporations entering one of the resource industries in Canada on a large scale. Since most of the output from their facilities is either sold on world markets or used by the corporations' other divisions, the markets are seldom totally unfamiliar to the firms at the time the investment decision is made. Despite their relatively small number, decisions to make new products or enter new product areas reflect both the growth policy of the corporation and the firm's methods of dealing with the extremes of uncertainty.

Market estimates have two aspects: price and volume. The presumptions that the firm is able to make about either depend on the type of product and the relative size of the firm in relation to the market as a whole. The pricing policies of firms embody their expectations about prices and market conditions; they are too complex to be considered in

detail here, but too important to be ignored. An examination of pricing policy and procedures is therefore included as Appendix II. This section will be restricted in its concern to the way in which price and volume estimates for new market or new products are presented for the purposes of investment evaluation.

Interview evidence indicates that:

- (i) Sales estimates have been the weakest of all financial estimates made by large firms.
- (ii) Corporate records have been designed for accounting control rather than sales analysis, with the result that the forecaster frequently does not get the information he needs.
- (iii) Recent efforts have been concentrated on the improvement of sales data.
- (iv) This has led to greater skepticism about sales estimates and to the realization that rate of return predictions are usually quite sensitive to errors in sales forecasts. For example:
  - \* One official reported, on the basis of recent "follow-up" studies: "Certainly in our experience the market estimates have had by far the biggest impact as to whether the benefits promised in a project are in fact obtained. This is to some extent a peculiarity of our business, where we have a very high proportion of fixed costs and a very low proportion of variable costs."
  - \* A senior planning official reported: "If you screen out any inaccuracies in the assessment method used, you can then focus attention on the accuracy of your market estimates and price estimates, and these are the important items for management consideration .... On occasions people still say 'Why increase the accuracy of the system in one area, knowing that other areas (sales forecasts) are grossly inaccurate?' but I feel that it is still worthwhile, particularly when so many of these techniques can be used with a short-cut method which can be handled by senior people with no great difficulty."
- (v) There is no uniformity in the errors of forecasts. Target forecasts are undoubtedly too optimistic, while justification

forecasts have often been too low, since the forecaster is not anxious to commit himself on paper to something he might not achieve.

- (vi) Range estimates are thought to improve accuracy by allowing a safety element to be combined with a best guess.
- (vii) The usual treatment for uncertainty seems still to be a "conservative" estimate, with considerably more resources directed toward improving the quality of the available data.

#### THE PREPARATION OF A FEASIBILITY STUDY ON THE BASIS OF THE COLLECTED COST AND REVENUE ESTIMATES

This operation may be done by the originating department or by staff officials. Members of operating management are always involved in assessing the "intangibles". Officials interviewed always stressed the importance of the intangibles and the difficulty of getting any data at all at the time the decision to invest must be made. The first section of this chapter described how preliminary project approval procedures are used to get around this problem to some extent; preliminary approval allows the projects to proceed without allowing the usual data requirements for appropriation requests to be circumvented.

- \* Thus one firm makes its preliminary decisions to produce new products on the basis of "plus" and "minus" factors. They do not actually rely just on the number of pluses and minuses, but they make little effort to get more than three or four degrees of magnitude distinction into their assessment.

Where such preliminary procedures are used there is seldom any explicit measure of the expected rate of return. By the time the appropriation request itself is prepared, the explicit estimates are usually

ready, since the interim research usually includes a market analysis. Thus, although the expansion decision usually is based on explicit data at the appropriation request stage, the effective decision has, in many cases, already been made. Because of the lower level conservatism described in chapter 1, the final estimates usually indicate a rate of return well above the required standards (except in those cases where the estimate is clearly made just high enough to gain approval for the project), whether or not the project has been subject to preliminary approval.

By the time the appropriation request has actually been prepared, the middle management operating officials have had a chance to evaluate the "imponderables"—what are often referred to as the "judgment factors". The importance given to these factors of course depends on the extent to which all the relevant variables enter the rate of return calculations. The officials of the firms which have made great use of discounted cash flow techniques say that they have removed from the vague categories of "imponderables" as much as can be removed, and have vastly improved their predictions and decision-making as a result. Others who rely less on formal procedures emphasize the primacy of the "seat of the pants" approach as the way of sorting the good projects from the bad. The fact that those who have adopted the new procedures attest to their accuracy does not by itself convincingly demonstrate that accuracy is actually improved; and there are virtually no data to test the proposition, since the firms that do not make explicit and detailed estimates of profitability have no formal predictions whose accuracy can be measured. Officials who rely on "judgment rather than procedures" when moving into new projects often say that this is because of the special difficulties of prediction in their particular industry.



- \* For example, a mining executive said that his firm's feasibility studies were based on the number of years it would take for the gross cash flow to equal the capital cost. The length of the pay-back period was then looked at in the light of markets, the anticipated life of the ore body, and the size of the annual cash flow. He suggested that the uncertainties involved in any major decision in the mining industry were so great as to preclude the use of any more exact calculations. "If we were making tea cozies or table napkins, it might be a different matter", he suggested, "but if a deal we were contemplating would be affected by a 2% change in borrowing costs, we would have no business contemplating it in the first place." To get a rough idea of the size of the company's allowance for uncertainty, the official was asked whether a 30% change in tax rates would affect the number of projects the company went ahead with. He thought not. He suggested further that it was generally considered in the industry that the data were too imprecise to permit the use of more precise calculations.

Differences among industries are difficult to test, as the sample is too small, and there are independent reasons for supposing that common procedures will be adopted throughout an industry, so that the use of sophisticated procedures in certain industries does not necessarily indicate that those are the industries where the data are most appropriate for the use of the procedures.

Thus we cannot tell to what extent the uncertainties specifically allowed for in profitability calculations are representative of the types of uncertainties faced by other firms with less formal procedures. In any event, even if we could tell that two firms with dissimilar procedures faced uncertainties of the same kind, we have already argued that the mere fact that they used different procedures would be enough to lead us to suppose that their reaction to growth opportunities might be different.

Nevertheless, it is of interest to examine the kinds of allowances for uncertainty:

- (i) Contingency factors in the individual estimates. Unless the separate allowances can be isolated, and in most instances they cannot be,



it is difficult to tell how large a contingency factor is being used. The pyramiding of safety factors is a widely-recognized danger.

(ii) Differential standards for projects of different risks. Under most of the firms' classification schemes, the expansion into new territories or products is treated as a maximum risk undertaking which is expected to promise the highest rate of return. This may be expressed in terms of length of payback.

The extra risk allowance for new projects is often not made specific:

- \* A senior executive of a pulp and paper company said that his firm would expand its basic capacity whenever it thought that more products could be sold, and would diversify whenever it saw a reasonable opportunity. Payback is looked at in both cases, although more closely in the second than the first, since the higher risk associated with new products makes it advisable that a higher return be promised. In neither case are particular standards used, "since there are many more facets to our investment decisions than the promised rate of return".
- \* Although one firm's usual required gross return on capital expenditures is 30%, an official noted that there was a certain type of processing equipment on which the required gross return was 50%, since the related styles and technology alter so fast as to make a long revenue life extremely unlikely for the equipment. If the latest machinery does not promise this rate of return (based on labour savings) the company will adopt more labour-intensive alternative methods of applying the new techniques.
- \* An official noted that in one division whose products were subject to obsolescence a two-year payback was required on all capital expenditures dealing with new products. (The requirement in the case of established products is considerably less stringent.)

(iii) In some firms the uncertainties surrounding new products have a sufficiently large favourable element that the profitability goal is actually lower. This is more likely to be so under the payback rule than under discounted cash flow, since the payback discriminates most against the project which does not achieve its full sales until several years have passed.

- \* Executives in a diversified firm suggested that new products might be adopted on the basis of a lower indicated first-year return than that required for normal replacement and expansion. "On many projects involving newly developed machinery or new processes, the prospective returns cannot be easily estimated, and may often be far larger than a cold look at the initial year's returns would indicate."
- \* A manufacturing official commented that a faster payback was required for cost reduction projects than for expenditures involving entry into a new product line. This is because the firm is willing to forego immediate profits in order to establish itself in a new line of business.

(iv) Informal margin for risk. Aside from the conservatism of lower management stemming from a desire not to present projects likely to be rejected, there operates on occasion a practice of deliberately leaving a gap between the indicated returns on proposed projects and the required minimum. As this practice was explained by an executive of a firm in which it occurs, the size of the gap is intentionally varied by the proposer in accordance with the possibility that the indicated return will not be achieved, so that at least the proposer has every reason for supposing that the project will realize a return greater than the required minimum. This would imply that the indicated returns themselves included no allowance for unfavourable outcomes, so that one might expect that the average of the actual returns would be less than the average of the estimated returns. The evidence in Table II, which shows that the projects examined produced on average a return higher than anticipated, indicates that this kind of informal allowance for risk is not generally made.

(v) Finally, there is an implicit allowance for risk in some cases where the prospect of an unfavourable contingency is weighed against the otherwise attractive estimated return. It might be thought that particular projects were readily undertaken because they had easily met an

established minimum rate of return standard; in fact, they might have been very close to the borderline, because the executive assessing the project saw a considerable possibility of unfavourable outcomes. If a project is marginal on the basis of its indicated return, then it is apparent that uncertainties are allowed for either in the estimates themselves or in the established standard (unless there is no allowance of any kind made for them). But in the case of approved projects whose anticipated return is above the standard required for approval, there is no general way of telling how close the project is to the margin of acceptability when all the unquantified factors are taken into account. If this sort of allowance were general, however, one would expect to find that the average of actual returns was in many cases lower than the estimated returns. As mentioned in (iv) above, the evidence in Table II indicates that, if anything, actual returns have been higher than estimates. This would suggest that the risks of unfavourable outcomes are taken account of by lowering the estimates of net revenues rather than by leaving a gap between the estimated return and the required minimum. This kind of allowance (a gap between the required rate of return and the estimated return) may, however, be made to allow for the possibility that the actual return will be different from (as opposed to just lower than) the estimate. As evidence for this, one might expect to find a larger gap between the required minimum and the estimated returns for projects whose "mean performance" (column 10 of Table II) has a high standard deviation (column 11 of Table II).

The data available to test various hypotheses about the way in which allowances are made for unfavourable outcomes and variations in both directions from estimated values are too scanty to allow a thorough analysis. The "follow-up" procedures (often referred to as "post-audit" procedures) used to measure the accuracy of rate of return estimates are in their infancy in the corporations whose records were analyzed, and the samples of projects of various kinds clearly were not large enough to permit general conclusions to be drawn. There is no specific evidence illustrating the relationship between the expected and achieved levels of sales. The comment was frequently made that actual sales usually take longer to reach their expected plateau level than is indicated in the sales forecast for the projects. This is apparently due, in most cases, to unforeseen delays in the technological development of the product and the co-ordination of marketing efforts rather than to faulty estimation of the size of the potential market. In the cases where specific efforts are made to assess the results of individual expansion projects, it is the net result rather than the sales figure which is measured and used as the basis for judging the success of the original estimation. It is a mistake even to generalize to this extent about a practice which is so rare in the corporations studied; the fact remains that researchers, and the corporations themselves, know little, in financial terms, about the success of individual ventures into new products and new markets. Table II contains what little quantitative evidence was obtained illustrating the range of actual rates of return on new projects in relation to their predicted values.

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A review of files in several corporations reveals that an increasing concern for the measurement of the success of estimation efforts follows soon after the establishment of operative profitability tests. Thus the current trend toward the adoption of more comprehensive profitability tests might be expected to lead to a larger future flow of evidence relating to the success of various kinds of estimates. It might also be supposed, though this is sheer conjecture, that measurement of the success of past estimation efforts of various types will lead not only to further efforts to improve estimation procedures, but also to the clarification of the nature of contingency allowances and risk premiums. So much is now subsumed by many firms under the category of "judgment" that it is virtually impossible to develop or test meaningful hypotheses about the way in which uncertainty is treated in expansion decisions of the type we have been considering. However, it is hoped that the above description of the types of uncertainty and some methods of dealing with them suggest fruitful lines of further investigation, when the appropriate data become available.



## REFERENCES

- 1/ A "two-stage" system involves a preliminary appropriation request, which, if approved, authorizes expenditures on engineering and pilot operations, followed at a later date . by an ordinary appropriation request, whose estimates of capital cost and operating results are based on the detailed engineering done on the basis of the preliminary appropriation request.

CHAPTER 3—THE INFLUENCE OF ANNUAL AND LONGER TERM CAPITAL  
BUDGETS ON THE PATTERN OF CAPITAL EXPENDITURES

The preceding chapters have been concerned exclusively with the influences coming into play at the time that a project is presented for approval on the basis of a preliminary or final appropriation request. At the same time there was an attempt to investigate what the approved projects have promised in the way of profits, and the extent to which the estimates have proven reliable. It was discovered, among other things, that the required rate of return for specific projects often depended on the way that project fitted in with the long term development plans of the firm, as well as on prior budget decisions. We have now to examine the influence of annual and longer range plans on the actual timing and size of expenditures.

A distinction is occasionally drawn between planning and budgeting, the latter being involved with specific expenditures and the former with the integrated pattern of future development. 1/ From the point of view of this study such a distinction is not helpful. Plans for the future may or may not be embodied in budgets; since there are more significant variations among budgets or among plans than there are between plans and budgets, the two kinds of forward planning are considerably alike. It is perhaps more appropriate to consider plans as divided by the length of time for which they apply.

ANNUAL BUDGETS

The usual pattern of annual budgets includes an operating plan, estimates of operating costs, revenues, and capital expenditures. The

capacity requirements indicated by the sales forecasts are reflected in the capital expenditure estimates, with the latter also involving decisions about the type and scale of operations in subsequent years. In particular, the capital expenditure budget comprises outlays on projects started during earlier periods, expenditures to be undertaken and brought into production during the current period, and finally projects to be commenced but not completed during the budget year. Similar to the capital budget in many ways, and to be considered in conjunction with it during much of the following analysis, is the element of the operating budget sometimes referred to as "major repairs and maintenance". The capital expenditures themselves usually comprise all intended outlays on capital equipment, including that portion of the outlay to be charged to expense rather than capitalized. The intent of the analysis which follows is to illustrate (1) the ways in which the budget estimates of capital expenditures are derived, (2) the factors influencing the total size of the budget approved, and (3) the influence of the budget estimates on the treatment subsequently accorded to individual projects presented during the year.

### Budgeting Procedures

The following examples illustrate the procedures used in the establishment of annual budgets for capital expenditures:

- \* One large firm has an established policy of making capital expenditures equal to all depreciation allowances, an established percentage of the previous year's profits, and a much smaller percentage of the company's net assets at the end of the preceding year. On occasion the flow of desirable project proposals during the year is insufficient to use all the funds allocated by the formula.

- \* The treasurer of one corporation noted that his firm's general policy of restricting capital expenditures to the amount generated by depreciation allowances allowed them to avoid making the big and expensive mistakes which could follow if there was freer use of external funds.
- \* A diversified manufacturing and processing firm has a policy that allows each of its divisions to spend funds generated by their own depreciation allowances. This policy does not apply in the case of large or special expenditures, or in areas of large growth potential. Annual capital budgets are submitted by each of the operating divisions and approved by the central management. The annual budget is quite specific as to individual projects, and once a project becomes part of an approved capital budget the subsequent appropriation request approval usually follows as a matter of course.
- \* "Each major project proposed in the budget should have supporting evidence as to its desirability attached to it. The justification is not usually expressed as a precise d.c.f. return because a lot of the market research may not have been done, and the cost estimates may have an error range of plus and minus 35% instead of the plus and minus 10% range when the project receives specific approval. The size of the capital budget is based on the expected economic attractiveness of the projects — of course the capital budget in itself is designed to get some feel of the magnitude of capital and current outlays in the ensuing year in relation to the amount of funds generated in the business and the amount of funds needed for dividends, debt redemption, and things of this nature."
- \* The head of a Canadian branch of a United States firm said that his budget requests were weighed by head office against the claims of the other divisions. He would then be allocated a capital expenditures budget within which he was expected to operate, barring a radical change in the opportunities for new investment.
- \* One international firm makes an over-all estimate of the amount of funds which the group as a whole should spend on expansion during the following year, and then informs the Canadian management of the sum within which they are expected to work.
- \* A budget official described the timing of budget preparation: "The capital budget is compiled two months before the start of the financial year. Each major project is classified by type of expenditure, except that there is a separate category for projects already approved on which further cash outlays are in effect committed."

The foregoing examples indicate the range of procedures used in deriving budget estimates of capital expenditures. The most uniform aspect of budget preparation is the timing, as in most firms the preparation of the capital budget takes place from two to six months before the start of the budget year. There is of course some variation, particularly among firms controlled outside Canada, since the number of stages of parent company approval which the budget goes through will affect the timing of the original budget submission. The capital budget is usually subject to review and approval by senior management and the board of directors, although, as a later example will show, this does not mean that there arises therefrom a commitment to the specific projects contained within the budget or even to the budget total.

#### Some Factors Affecting the Size of the Capital Budget Approved

Attempts were made in several firms to analyze the factors which enter directly and indirectly into the determination of the amount of the budget estimate of capital expenditures.

#### CHANGES IN PROFITS

It is difficult to sort out the cash effects from the earnings effects when profits change, as the comments made in interviews often indicated a confusion between the two effects, in most cases because they were concomitant. The following examples show how the level of current earnings may affect the size of the capital budget approved, and also how the effects of the expenditures themselves on reported earnings may act as a limit on the size of the budget approved:



- \* At the time the capital budget is presented to the board toward the end of the preceding year, it is accompanied by a pro forma profit and loss statement showing the company's anticipated net earnings assuming that all the proposed capital expenditures are undertaken. A statement of anticipated cash flows is submitted at the same time, so that the board knows at once the earnings which are expected to arise in the year in question and also the net amount of new funds which will be required if the proposed capital expenditure programme is carried out. The board also has at hand anticipated net earnings for the current year, a figure which is apparently of great importance when the following year's capital expenditure budget is being considered. The board then examines the proposed capital expenditure programme in the light of the current and prospective earnings. If the current or prospective earnings are "inadequate", then the capital expenditures programme is reduced. "Inadequate earnings" are those which are "not sufficient to support the obtaining of the amount of money required to finance the proposed capital expenditure programme". Although a case has "never arisen when funds were not available", the board feels that whenever earnings are below a certain (but undefined) level, there are definite limits to the amounts of capital which the company can expect to get from the capital market during that year. The capital expenditure programme is then trimmed "to the point where it can be successfully financed, given the company's current earnings position and the state of the capital market". A board member stated that the particular items cut out are those which are "least likely to improve the current earnings position". When asked if there were ever any items cut out of the budget which promised to provide a net improvement in the current earnings position, he said that there were not. However, he did not seem very sure of this statement, and was unable to indicate what calculations were made to determine whether particular projects would or would not provide net increments to current earnings. To the limited extent that calculations are made of the effect of proposed expenditures on current earnings, it would seem that the company's budget-paring procedures are such as to cut heavily expenditures on assets with long lives, and more particularly on those whose early years of operation are unprofitable. Most of the items which are cut out are apparently those whose effect on the current earnings position cannot be easily determined, or at any rate is not determined. The items include such things as new office equipment, replacements, and warehouses.
- \* One utility's board of directors feel that they "must look after the interests of the current shareholders", and do so by not expanding so fast that the current earnings are adversely affected. The reason is that even if the extra expansion is profitable on a long term basis the present shareholders might wish to sell their shares before the cash flow starts to appear, and would therefore be hurt by expenditures so large that current earnings (and share values) were impaired.

In some firms it is clear that a division which has reached or dropped to a certain level of profit is likely to have its budget altered as a consequence. The divisions with low current profit are likely to be allocated a smaller sum for non-return expenditures, as indicated by the following examples:

- \* A head office executive of a firm making a variety of goods in separate locations indicated that if any division shows a higher than average profit one year the division's management would be able to obtain, in the subsequent year, approval for expenditures showing what would otherwise be an unsatisfactory rate of return. The aim of the policy is to allow managers of high profit divisions to make whatever expenditures they think important.
- \* Two divisional managers were asked for an opinion of the effects of current profits and sales on capital expenditures. They suggested that the usual practice is to reduce expenditures in times of low prices and profits and to increase them in the reverse circumstances. "Certainly low prices and profits affect our planning. This type of influence can't be helped." There are two kinds of influence which the officials think exist. On the one hand, when prices are high, there is an inclination not to strain oneself looking for ways to improve the production processes. On the other hand, when prices are low, there is an incentive to discover efficiency-increasing expenditures but no inclination at all to make capital expenditures which also involve some increase in capacity. Similarly, the low profits accompanying the periods of low prices affect, to some extent, the view which central management takes of the division's expenditures and also affect the outlook of the division planners themselves.
- \* A divisional executive in a decentralized firm that grades its divisions on the basis of earnings described some of the effects of fluctuations in profits on the volume of expenditures approved. The importance of current earnings leads to a concentration on projects of small size and relatively short earnings life (fast payback). He said it was only in seasons or years of high profits that large projects of a long term nature could be undertaken, although even in those years there was a tendency rather to spend on a lot of small items which could be written off quickly. In times of low profits non-return or long term projects are deferred by the divisional managers, who do not want to hurt their current earnings. This is especially true of capital items which are charged to expense, and thus are written off entirely against the income of the year in which they are purchased.

- \* A divisional manager noted that beyond a maintenance budget, which was determined at the beginning of the year on the basis of anticipated profits, there was no definite capital budget. He noted that as conditions changed with respect to cash position and profits during the year, his idea of what a good expenditure was would change, but he chose not to govern his approvals by a budget established at the beginning of the year. He noted that a change of outlook toward capital expenditures was transmitted very quickly from central management to himself and throughout the business. In times when expenditures are discouraged (when current profits are low) it is the non-rate of return items which are deferred.

At the same time, it was noted by some officials that there were chronically low-profit divisions which could get approval for capital expenditures which offered to improve their average return, even if the return was below that required for approval in other sectors of the firm.

#### CHANGES IN CASH FLOW

Within the large firms studied the effects of cash flow on spending were less direct than those of current earnings. If the operating and capital budgets drawn up indicate a cash drain which would impair the company's liquidity position, then a reduction in the capital expenditure budget may follow. On occasion the tight cash position can be forecast before the specific operating and capital budgets are drawn up, so that the need for conserving cash is taken into account at the time the original estimates are being prepared. As mentioned above, it is difficult to disentangle the effects of a given change in cash flow from those of the changes in the level of profits which are so often coincident. It is easier to differentiate the effects of cash flow from those of profit potential, since it is relatively easy to find cases where the expected marginal efficiency of investment was high while expenditures were restricted by what was held to be inadequate cash flow. For example:



- \* A senior official describing the influence of cash flow: "Certainly I know that several years ago projects were deferred or reduced in amount by the unavailability of cash and the difficulty of getting new funds in. This was partly linked to the low current profit position and the difficulty of raising additional sums through borrowing. Certainly the parent company made cash available for capital expenditures while similar quantities would not have been available from normal commercial sources at that time in the company's history."

This depressant effect of low cash flow on a capital budget should not be taken as a suggestion that there is likely to be an important correlation between low cash flow and low capital expenditures, since the effects were most often found in firms which were in fact growing at a faster than average rate. The point is rather that there were even more capital expenditures which the firms would have made had they not felt constrained by their cash position. In cases such as this, executives were asked to what extent they regarded additional external funds as a means of reducing the effects of a low cash flow from operations. There were two general types of answer. On the one hand, there are a few firms that choose as a matter of policy not to borrow in normal circumstances. On the other hand, the many firms that are willing to borrow are often constrained by self-imposed liquidity requirements to restrict their borrowing when it reaches a certain limit.

- \* A senior executive commented that as the company's short term debt had from time to time risen above 10% of total assets, he sensed that several members of the board felt that the company was getting over-extended, and steps were taken to restrict the level of borrowing. The executive suggested that he often shared the apprehensions of the board members; acknowledging that "perhaps we are a little over-sensitive about the way the industry is regarded by investors and the financial community."
- \* Even though the officials of one firm stated that the company would be willing to use long term debt to finance profitable expansion, all the executives agreed that a project would have to meet rather high standards if it were to require such borrowing.

In most of the cases examined where changes in cash flow affect the budget total approved, the influence originates at the higher levels in the firm, although it may be transmitted down.

- \* A division manager was asked whether occasional cash pressures affected the thinking of the people below his level. He was emphatic in his view that people below his level knew of cost but they had no idea of finance; that planning for their division was done in complete ignorance of the company's over-all cash requirements. He said their view was that they were working for a big company which had a big pot of money, that had, for all intents and purposes, no bottom. He said that even things such as profits, depreciation and certainly tax factors were all a mystery to those operating at the lower levels.

Attitudes toward borrowing differ considerably from firm to firm, but, for particular firms, tend to be relatively stable over time. These stable attitudes toward the use of external funds are referred to in this study as the firm's "financial policy" and are discussed in some detail in Chapter 5.

#### THE EFFECTS OF MONETARY AND FISCAL POLICIES

Budget approval usually involves, as a matter of course, senior level discussion of the economic climate and government policies. The effects of particular types of fiscal policies will be discussed in Part Two of the study, while some of the effects of monetary policy are discussed in the following chapter. In addition to its effects on the willingness of corporations to borrow in the face of unattractive rates, restrictive monetary policy may have effects on the general willingness of the corporation to spend. Research conducted by the Royal Commission on Banking and Finance indicates that while these effects may be reflected in more conservative estimates being used to justify new projects, the primary point of impact of these psychological effects is on the capital budget as a



whole rather than on specific projects. Although the over-all impact of recent monetary policy changes in either direction has not been extreme, it has been sufficient to illustrate that it is the "non-return" categories of the budget that are more likely to be subjected to special scrutiny when there is a change in government policy toward capital expenditures. 2/

THE AVAILABILITY OF PERSONNEL WITHIN THE FIRM TO SUPERINTEND THE  
DEVELOPMENT OF PROJECTS

For example:

- \* A vice-president suggested that the operative restriction on his firm's capital expenditures was more the inability to co-ordinate a larger programme than the unavailability of profitable projects. He acknowledged that growth in some divisions of the company was faster than in others, and faster in some time periods than in others, but said that the organization as a whole was unable to digest projects at a much faster rate. He suggested that this type of situation was common throughout industry: "I suggest to you that any fair-sized organization could not grow at a higher rate than 15% per year without asking for trouble."
- \* A division manager described the prime limitation on the amount of capital expenditures done in any particular year as the provision of engineering time. He noted that he ranked the projects in priority for engineering consideration and noted that the length of the priority list of unengineered projects varied from year to year, 1957 and 1963 being two noticeably more crowded years. He stated that there is a substantial incentive not only to cut back some projects in heavy years, but to carry out as much as possible during the lighter years since "you just can't have the engineering staff loaf around for a year." The plant has an engineering staff of five, with the industrial engineering man probably being in the key position as far as the development of capital expenditure proposals is concerned. He is often called in by a supervisor and presented with a problem he is expected to solve in terms of recommendations which specify the type of machinery and the probable payback period, or he may be presented with tentative solutions which he is expected to authenticate. In general, the staff does not go around looking for projects to do but follows pretty strictly the priority list established by management. The division manager was asked whether the current pressures or any past pressures in the engineering staff provided substantial incentive to increase its size. He noted that there were substantial lags in this regard with a decision to add to a fixed engineering staff being treated as a very serious one not likely to be made on the basis of temporary pressures on capacity.

## THE VOLUME AND NATURE OF MAJOR PROJECTS TO WHICH THE COMPANY IS COMMITTED

Two examples:

- \* Two divisional executives were asked whether there had been a noticeable increase in the number of projects presented for their approval since the recent lowering of the rate of return requirement. Both officials puzzled about the matter, and both finally concluded that there had not been much in the way of an increase. One executive attributed this to the number of large capital projects in construction at the present time. With this much on, "the boys just don't have time to develop the 10,000 dollar jobs." The primary pressure at the plant is on the engineering staff, which contains a plant engineer, a mechanical engineer and one draughtsman. Although the central engineering staff is drawn on quite heavily for the larger projects, the development of smaller projects and supervision of installation work must be done by the plant staff, and when they have large projects on they are not in a position to research the small new items.
- \* "Our capital expenditure outlays do vary considerably from year to year ... as far as I am aware, we do not vary our standards of attractiveness in relation to the availability of cash. There are times perhaps when we want to conserve cash if we know there is something very major coming along in the near future ... and perhaps some projects have been postponed for some time, but this has not been so in recent times."

## REQUIREMENTS OF FOREIGN DIVISIONS

In the case of Canadian firms which are subsidiaries of foreign corporations there may be changes in budget policy which are related to the financial requirements of divisions operating in other countries. For example:

- \* A Canadian subsidiary of a U.S. firm was advised by its parent company to cut down on spending because of a sharp rise in U.S. interest rates. The Canadian company was at that time borrowing only from the parent company, which in its turn was borrowing in the open market.
- \* A vice-president noted that one year the parent company directed a 15% cut in the capital budget of the Canadian subsidiary because of a decision to cut capital expenditures throughout the world.

## THE EFFECTS OF CAPITAL EXPENDITURES ON THE LEVEL OF CURRENT OUTPUT

- \* A senior official said that the top manufacturing officials got together at budget time and considered the suggestions for capital expenditures submitted by their subordinates. A view would be taken by them that the company could afford to do perhaps two thirds of the recommended items. When asked what he meant by "could afford to do", the executive began to talk in a tentative way about financial restrictions, then dropped that approach and said that perhaps what he meant was that the company could not undertake more than a certain amount of expenditures without interrupting the current flow of production.

The Importance of Budget Estimates

In this section we shall consider the influence of budget estimates on the volume of capital expenditures receiving approval during the year.

Budgets have their greatest significance in firms where the profitability of capital expenditures is not, or cannot be, assessed with any degree of accuracy. Decentralized firms often rely on the established capital budget as a control on the actions of the various divisions. By the same token, Canadian firms which are subsidiaries of foreign firms very often operate within a prescribed budget for capital items. As to the relative effects of established budgets on various types of expenditure, expenditures which can be clearly shown to meet an earnings test are seldom restricted by the budget, while the categories of maintenance, replacement, and quality improvement are generally expected to stay within the budget estimates unless there are very compelling reasons to the contrary. Thus the budget-time influences on capital expenditures are likely to set an outside limit on the total amount to be spent during the year on expenditures of a type where the rate of return consequences are not explicitly measured. The next chapter will show that if budget cuts are made during the year, it is this kind of expenditure which is most likely to be reduced. On the other hand, if circumstances alter during the year so as to change the number of projects which meet the established rate of return tests, then the volume of such expenditures which are approved is likely to alter by the same amount. Usually the budget estimates of the number of rate of return projects which will be presented are predictions with no great importance attached to them by those approving the budget. The funds cannot be drawn on unless specific projects can be



proposed which show the required degree of promise, and if many profitable new projects turn up they are likely to be approved. This last point is supported mainly by hypothetical statements, since most of the officials interviewed noted that the staff members preparing the estimates were usually over-optimistic about the number of projects they would be able to present during the year.

- \* Two divisional executives were asked to explain the importance of the appearance of a proposed expenditure in the budget. They said that the subsequent approval of an appropriation request did not depend at all on whether or not the project had been in the budget. The reason for this is that the division very seldom is able to spend as much as their budget predicts, so that they are free to substitute any new expenditures which can meet the rate of return requirements.
- \* The president noted that it was common for budgeted amounts for particular projects to be over-expended, but for the amounts budgeted for a particular period to be under-expended, since production officials are generally over-optimistic about the time taken to get the facilities into place.

There are a number of ways in which the presentation of projects can be altered so as to fit them within established budgets. The fact that such procedures are adopted indicates the influence of the budgets on spending plans, although it does not provide any very reliable measure of the changes in total spending due to the requirement that expenditures be kept within budget estimates. The examples below will indicate some of the influences of annual budgets on the subsequent flow of project proposals.

- \* A division manager said that his established budget was really nothing much more than a guide-line since in the middle of one year his department does not even know how much it is going to produce in the following year, and thus cannot accurately predict the amount of equipment which will be required. He therefore does not feel constrained by the budget to refrain from asking for approval for a non-budget item if he needs the equipment. He agreed with the comments of other divisional managers that it was harder to get non-budget items approved, but reiterated that he would not let this difficulty deter him from making the proposals and getting the necessary equipment.



- \* A senior official in another firm described the treatment of extra-budgetary proposals: "Now when a proposal comes in that hasn't been forecast, it's usually for a good reason, and it gets favourable consideration. But sometimes they are turned down, and I imagine that the extent to which the boss will look with favour on this sort of thing will depend on how much money he has left in the budget.... If he sees that his budget is pretty nearly fully spent, or he anticipates that it will be, and that he would have to go to his directors for a supplementary appropriation, then he ~~is~~ likely to say, 'let's wait for next year's budget'.... I've seen these reactions take place.... "

#### LONGER TERM PLANNING

Longer term planning may be concerned with particular expansion programmes involving several stages, or with general long range forecasts for the growth of the economy and of the firm. The importance of this planning depends on the way in which it ties in with the shorter range planning, the length of time it takes to construct new facilities, and the extent to which future growth is determinable by management decisions.

Detailed information about the prevalence of planning periods of different lengths was not collected and tabulated, since the relationship between a formal plan for a certain time period and the effective planning actually done is even weaker than that between formal assessment procedures for capital expenditures and the effective standards applied.

- \* One official noted that long term projections of earnings were especially popular with financial analysts. He suggested that if his firm were to include a ten-year plan of operations and expected results in their annual report, they would be awarded analysts' prizes for informative statement presentation, regardless of the reliability of the estimates or the underlying quality of management. He prefers to have no formalized plan of activities, since in his industry there are apparently too many unknowns for forecasts beyond a year to be worth anything.

While long range planning has frequently been adopted by firms and made the concern of a special department or group, the generation of expansion plans is often carried on quite independently of the activities of the long range planning group. In some cases the growth estimates developed by the planning group are used as supplementary information by those concerned with more immediate planning of facilities, but the influence of the longer run forecasts is problematic. In the case of capital-intensive utilities, the situation is completely different.

For example:

- \* A large utility operates with two capital expenditures budgets, one expressing fairly firm intentions to make certain expenditures during the budget year, and the second a six-year forecast of the capital expenditures expected to take place in each year. The one-year budget is specific and detailed; the six-year forecast is generally fairly accurate in its estimate of total capital expenditures, but is not specific about individual items within the budget.

For many utilities, the time lags in construction are so great, and the consequences of inadequate capacity so severe, that their construction programmes are based directly on demand forecasts running up to a decade or more into the future. But for firms whose basic level of activity and range of products are not so closely circumscribed by the demand for a single product in a fairly stable market, the existence of formal plans stretching far into the future is usually indicative of a growth policy rather than of specific expenditure plans.

Although five- and ten-year estimates of growth and capital expenditures are treated always with care and often with scorn by the senior management officials for whom they are prepared, there are some longer range plans which do involve a definite management commitment.

In particular, major resource development schemes, such as pipelines, mining ventures, oil and gas developments, and pulp and paper mills, are based on plans, usually quite firm in nature, stretching out some years from the date of the original decision to invest. Thus the capital expenditures made by such firms in any one year would be directly dependent upon plans and decisions made two, three, or more years before, and largely independent of whatever influences might otherwise have affected expenditures made in the current budget year. It is impossible to get a reliable estimate of the relative importance of this kind of expenditure, or even to distinguish it very clearly from similar types. Certainly the amounts of such expenditures would vary considerably from time to time. In 1957, a year of major capital expenditures on resource development, a large fraction of the outlays were on projects started during the early 1950's. In more normal years there is a rather smaller fraction of total expenditures on these large projects, and more on smaller expenditures subject to more immediate influences. This matter will be discussed further in the next chapter.

In general, the longer term budgets examined were for the purposes of predicting cash flow and financing requirements, and except in firms with very long planning and construction lags did not commit the firm to follow a particular spending programme. The information provided by longer term projections may be important in the process of predicting the profitability of new investment, and thus have certain effects on the number of projects presented and approved. But the fact that such a plan predicts that  $x$  dollars will be spent on capital expenditures in a particular future year does not mean that the actual volume of expenditures will be altered in an attempt to match the plan.

## REFERENCES

- 1/ See, for example, William G. McEachron, "Long Range Capital Planning—an Over-View", in American Society for Engineering Education, Engineering Economy Division, Applications of Economic Evaluation in Industry, Papers and Discussions of the 1962 Summer Symposium, June 16-17, 1962, edited by Arthur Lesser, Stevens Institute of Technology, Hoboken, N.J., 1962, p. 3. "One of the most interesting and significant of these contrasts [between planning and capital budgeting] is the fact that corporate planning seeks to deal with the integrated picture, while capital budgeting deals with individual fragments of this picture."
- 2/ For the analysis of the capital expenditure effects of monetary policy, see Chapters VI and VII of The Effects of Monetary Policy on Corporations, an Appendix to the Report of the Royal Commission on Banking and Finance. The Appendix, by John H. Young and John F. Helliwell, has been published separately by the Queen's Printer, Ottawa, 1965. See Appendix I of this study for a description of the scope and method of the R.C.B.F. survey.



#### CHAPTER 4—THE SHORT RUN FLEXIBILITY OF CAPITAL EXPENDITURES

The last chapter described the factors which influence the formation of annual or longer term plans for capital expenditures. The information presented there is essential background for the present chapter, which deals with the short term flexibility of investment outlays. It describes a number of possible reasons why a firm might wish to deviate from the spending plan contained in its annual or longer term budgets, it analyzes briefly the extent to which large firms have altered their capital expenditures in responses to changes in conditions, and presents a few scraps of evidence about the costs to a firm of altering established investment plans. Naturally there will be some factors mentioned in this chapter which were also important in the last chapter, since the conditions which limit the expenditures which are budgeted for at the beginning of the year may also restrict the extent to which expenditures can be altered during the year.

If a reliable general estimate could be made of the flexibility of capital expenditures by large firms, and of the costs of changing the timing of capital outlays, it would be of great assistance in the development of monetary and fiscal policies designed to stabilize the level of investment. Unfortunately, the character of investment opportunities and the nature of productive capacity vary so much among firms and from time to time that any single measure of the flexibility of investment spending would certainly be misleading. In addition, any estimate of the amount by which spending could be altered in the short run must be based not only on the pre-existing investment opportunities and supply conditions, but also

must suppose a change in conditions of a particular type. Part Two of this study examines the effects of particular tax changes on the size and timing of capital expenditures. This chapter will illustrate the kinds of factors which govern the short term flexibility of expenditures, without attempting precise estimates of the aggregate amounts of spending which have been shifted from period to period in response to specific changes in conditions.

Certain points from the analysis of the last chapter should be recalled. First, it was demonstrated there that several factors other than the anticipated profitability of investment projects influence the size of the capital expenditures budget for a particular year. Secondly, once an annual budget has been approved, it becomes within some firms a spending plan which is not altered except in the event of an extreme change in circumstances. Finally, it was noted that the expenditures which are most likely to be held within their budget estimates are those for which no specific rate of return calculations are made. In cases where circumstances change so as to make a cutback in spending advisable, it is these same non-return items which are subjected to the greatest pressure.

Short run changes in capital expenditures will be taken in this chapter to mean, roughly, the resultant changes in spending occurring within the calendar year following some datable change in circumstances. It is perhaps useful to think of the short run changes as being of two distinct types. First, it is possible to change the starting date or the length of the construction periods of projects which would be undertaken in any case. Secondly, the size of the capital expenditures programme in any period may be altered by the addition of new projects which

otherwise would not have been undertaken, or by dropping projects completely from the list of items being considered. Although in practice it is difficult to distinguish the postponed projects from the cancelled ones and to separate the accelerated projects from the new facilities which otherwise would never have been constructed, the distinction is one which in principle it is useful to maintain. Postponement and acceleration imply changes in the timing of an expenditure programme whose size and composition are otherwise unaffected. Abandoned or novel projects, on the other hand, involve changes in the characteristics as well as the timing of the projects undertaken, and present the possibility that the total of expenditures over a period of years may well be substantially higher or lower than it otherwise might have been.

#### THE INCENTIVES FOR ALTERING CAPITAL EXPENDITURES ON SHORT NOTICE

##### MAY INCLUDE

##### Marked Changes in the Firm's Current Profits or Cash Flow

For example:

- \* One firm collects income statements from its various divisions several times throughout the year, and the current results of each division affect the treatment given to their capital expenditure proposals. The different treatment given to the capital expenditure proposals of profitable and unprofitable divisions does not imply that there are differential rate of return standards, for the standards to be met are the same for all projects. The difference lies in the attitude taken by senior management to the assumptions underlying the rate of return estimates. The less profitable departments find it less easy to justify their assumptions to senior management.
- \* An official in another firm emphasized the importance of current results on willingness to spend: "Nineteen sixty was the year when all the professional economists were wrong without exception; our sales forecast for that year was about 10% high. We did the forecast in 1959. Fifty-nine was a good year, you see -- this shows the influence of the short term. It has an influence on



the timing of the creation of facilities and the timing of capital expenditures, it definitely has. Although we might have recognized long term requirements in 1960, we would not have said, 'go ahead now.'

- \* In one firm any change in conditions which affects liquidity affects capital expenditures, either by changing the size of the rate of return deemed "attractive" (possibly an alteration from a 25% gross return on initial cost to 30% or vice versa) or by leading to changes in the cost and revenue estimates themselves, or both. For example, recent increases in the dollar value of receivables (caused by slower payment and higher prices) and of inventories (higher prices) caused the cash position to tighten and led to certain postponable projects (chiefly painting and minor replacements) being shelved. As a result, the capital expenditures for the year were 5-10% below what they would have been otherwise. Most of the items postponed will come up for consideration at a later date. The firm could apparently have obtained more credit, but chose not to increase their short term borrowing above what had come to be regarded as its "normal" level.
- \* An official of a utility stated that in the fall of 1957 there were substantial cuts made in the company's maintenance programme. The cutbacks amounted to approximately 10% of the scheduled annual maintenance. The cuts were made so as to improve the company's year-end cash position, which was weakened by an unexpected drop in earnings during the final months of the year.

#### Changes in the Anticipated Profitability of New Facilities

These may be based on:

#### TECHNOLOGICAL CHANGES

Changes in technology, in general, lead to the designing of new projects embodying the new processes, while expectations of future changes in technology may lead to a postponement of expenditures. Whether any particular change will lead to an expansion or reduction of expenditures within the current year will depend on the circumstances. Most of the technological changes which were mentioned in interviews were major industry-wide developments of production techniques which were adopted sufficiently gradually that no changes were made in planned expenditures



except when regular budgets were being prepared. The situation is somewhat different with respect to the technological innovations developed by the firm's own staff. In some cases the research and development department will be working on a pilot project without knowing whether the results will be sufficiently favourable to warrant a major investment in facilities. In such instances the firm is often willing to make the necessary investment in production facilities as soon as any breakthrough is made by the research staff. If a similar break-through is made by a competitor, the firm may respond by altering its own techniques to the extent that it is permitted by law and its limited knowledge of the new techniques. Technological changes in other industries may also lead to short term changes in expenditures, as a firm may be required to provide facilities to cater to the changed demands of its customers. These influences would be more marked in the capital goods industries, where firms must be prepared to provide equipment for the application of new techniques in other industries.

#### ACTIONS OR ANTICIPATED ACTIONS OF COMPETITORS

There are only a relatively few industries in which the investment behaviour of competitors is so inter-related that firms change plans on short notice because of the actions of competing firms. The "necessity to meet competition" may often be listed by firms as one of the key factors underlying their investment plans, but it was not often seen to be a cause of a short term change in intentions. Retail trade is one industry where reaction is quick, as the location plans of competitors are of central importance to decisions to construct new facilities. Any new information about the intentions of competitors may lead to a change in investment plans, and even a change in the timing of construction

already under way. Most expenditures described as "required to meet competition" are for improving the quality of the product and are usually part of the budgeted programme of expenditures. Only where competitive conditions or product characteristics are subject to rapid change do quality improvement expenditures require current capital expenditures to be changed at short notice.

#### CHANGES OR ANTICIPATED CHANGES IN THE SUPPLY OR DEMAND CONDITIONS FOR RAW MATERIALS, LABOUR, OR FINISHED PRODUCTS

These are quantitatively perhaps the most important reasons for alterations in spending plans. Of all the industries, mining is perhaps most subject to changes in the anticipated profitability of investment due to changes in available minerals or markets. For one thing, world metal prices vary considerably, occasionally with great rapidity. In addition, the timing of the discovery of major mineral deposits does not coincide with budget periods, so that opportunities for investment may increase or decrease (depending on who made the discovery) the attractiveness of new investment overnight. Most of the mining companies interviewed have therefore attempted to build as much flexibility as possible into their organizations, so as to be able to install new drilling, extractive, or refining equipment on short notice at minimum cost.

In most industries the more gradual shifts in factor costs and product prices lead in the very short run to small changes in the characteristics of investment projects rather than substantial changes in the number of projects. In the longer term, of course, these gradual changes in cost-price relationships can cause marked changes in the profitability of investment in certain industries, and as the opportunities become known to potential investors the volume of related investment may increase

dramatically. Since many of the major projects in the resource-based surges of capital expenditures in the last decade have been made by foreign-backed ventures making their first expenditures in Canada, it does not make much sense to emphasize the distinction between short and long term changes in investment plans in response to changes in relative costs and prices. What matters is the length of time that passes between a major change in profitability and the consequent change in the level of investment. To answer this question properly it is necessary to know the reasons why time lags are the length they are, and what might cause them to be different. These questions are considered in some detail in this chapter, commencing at page 96.

CHANGES IN MONETARY OR FISCAL POLICIES, AS EVIDENCED BY TAXES, TARIFFS, GOVERNMENT SPENDING, INTEREST RATES OR THE EXCHANGE RATE

The effects on the anticipated profitability of capital expenditures may be evidenced by changes in the estimated sales revenues, costs, net profits, or by changes in management's general attitude toward capital expenditures. Several firms noted that their budgets are subjected to review during the financial year if monetary or fiscal policies change markedly. For example:

- \* Even after one manufacturing firm's budget has been approved in Canada and at the parent's head office, there is still room for some changes to be made, in both the size and timing of particular projects. At the monthly management meeting following the government "austerity measures" of 1962, the entire capital expenditures programme was reviewed to see whether there were any items which could be postponed, without loss, to a later date. This "hard second look" at the capital expenditure programme was not related to the availability of funds (the company generates more cash than it currently requires) but to the management's lack of confidence in the sales forecasts prepared before the exchange rate crisis and the related budget measures.

Research carried out for the Royal Commission on Banking and Finance indicates that there have been very few occasions in the past decade where



monetary conditions have changed rapidly enough for large corporations to wish to make short term changes in their expenditure plans. 1/ The following case is definitely an exception:

- \* In August 1959, a large firm found itself unable to draw on a bank loan for the construction of a small new building. It was possible for the firm to re-establish its credit almost immediately, but by that time the opportunity to undertake the project had been lost, so that the project had to be abandoned.

Changes in fiscal conditions, if the import surcharges of 1962 may be considered as such, have had considerably greater effects on the size and timing of capital expenditures. The combined influence of the devaluation, import surcharges, and high domestic interest rates in June of 1962 was sufficient to lead several large firms to take a "hard second look" (as indicated in the example above) at their expenditure plans for the year. There were postponements in some firms which reduced their total expenditures below what they would otherwise have been. In other firms there was a move to manufacture import substitutes, or to find a domestic supplier whose price was lower than the price of imports plus surcharges. The total response by large firms was probably a temporary reduction in expenditures as projects were postponed because of general uncertainty or the shortage of credit, followed by an over-all increase in the fourth quarter as most of the postponed projects were restarted and some efforts were made to increase capacity for the production of import substitutes.

The effects of some specific tax measures on the timing of expenditures will be discussed in the chapters in Part Two of the study.



THE SCOPE FOR, AND COST OF, ALTERING EXPENDITURES IN THE SHORT RUN

These will depend on, among other things:

(1) The proportion of current outlays for projects started in previous periods, or for projects to which the firm is otherwise committed. This proportion depends on the length of order times and construction periods.

The length of planning and construction periods is important for two reasons. On the one hand, the length of the construction period will largely determine the volume of expenditures in the current period that is independent of any decisions made in the period. On the other hand, the combined lengths of the planning and construction periods determine the time lag between a decision to spend, made in response to a change in current conditions, and the actual outlays on construction and equipment. The following examples illustrate typical planning and construction periods in various industries. 2/ It must be recognized that these are examples based on particular projects and that the length of time it takes to plan and construct facilities varies considerably over the business cycle, with the urgency of the need for the assets, and with the circumstances surrounding the particular projects. 3/

- \* An official in a large oil company estimated that it takes six months to plan and eighteen months to build a new refinery; and six months to plan and six to build a gas processing plant; while service stations of the simpler types can be built with little planning and a two-month construction period.
- \* Following a datable increase in sales expectations, another oil company took six months to design and approve an addition to capacity, and nine months to construct the facilities. This was thought to be a typical lag pattern for normal projects, with more complex projects such as an entire new refinery taking substantially longer.

- \* A distillery executive suggested that their projects take six months in the planning and decision stages and six months in construction, with certain variations depending on the type of construction.
- \* A pulp and paper manufacturer gave an example of the kind of lags in his industry between an apparent change in business conditions and the construction of new facilities. In September of one year, the sales expectations for one of the company's products increased considerably. By February of the following year plans had been drawn up and an expenditure of three million dollars had been approved. The construction took a further 12-14 months. The construction time was less for this project than in many other cases because it involved the expansion of old facilities rather than the construction of a completely new plant. There is more uniformity in the length of time which passes between a change in business conditions and the first major expenditures on new facilities. The decision and planning period is usually between six and nine months in length.

- \* A retailer described the timetable for the construction of a large retail outlet as follows:

1. January, 19A - Preliminary decision made to build in a particular town.
2. May, 19A - Approval given to the expenditures required, on the basis of preliminary engineering forecasts.
3. September, 19A - Initial drawings prepared and approved.
4. May, 19B - Construction started.
5. March, 19C - Project completed and opened.

It was suggested that the planning and engineering time on this project could have been reduced by about six months if there had been any particular reason for doing so. Any further reduction in the planning time or in the construction period, for a store of this size, would involve substantial extra costs. Two years is regarded as the minimum time required for the gestation and construction of a major project.

- \* The time schedule of decisions and outlays for the annual capital expenditures of a large pipeline operator is as follows:

- July, 19A - Sales estimates for 19C prepared.
- September, 19A - Capital cost estimates prepared and letters of intent sent to manufacturers of equipment. At this time the equipment manufacturers start to make equipment in anticipation of the orders they hope to get.
- December, 19A - Construction specifications published and sent to suppliers. Approval of sales estimates and prices sought from the regulatory authority.
- January, 19B - Equipment contracts signed.
- January - April, 19B - Construction design completed.
- April, 19B - Bids received and contracts awarded for construction.
- April, 19B - Regulatory authority's approval obtained for construction plans and terms of sale.
- May, 19B - On site construction starts.
- October, 19B - Construction completed and facilities available for use.

- \* Commenting on the short run flexibility of his expenditures, a division manager said that the size of the engineering staff obviously limited what could be done, and secondly, that it took time to choose and design appropriate facilities. As an example, he noted that on the company's small new production line it took eight months to decide that the expenditures would be undertaken and the form they would take, another year to engineer the project, and a final four months to get the necessary equipment.
- \* In the fall of year 19A, one firm's economists make an appraisal of the economic outlook, and make a general estimate of the capacity required to meet the estimated demand in year 19C. These forecasts are subject to approval at a higher level, and are then forwarded to the separate departments for the estimation of the corresponding 19C expenditures for each department. These detailed estimates would be prepared by June of 19B and approved by senior management. Board approval would follow in October or November of 19B. At the beginning of 19C, a priority list of the proposed capital expenditures would be drawn up, the most favourable expenditures being undertaken immediately. The remainder of the projects would not be undertaken until mid-year approval was granted. In this way the company leaves itself some flexibility to adjust expenditures during the year. Thus, although the amount of capital expenditures to be made in the last half of 19C is established in principle in the fall of 19A, implying a long lag, there is a considerable amount of flexibility left in the expenditure programme for the company to make any necessary adjustments indicated by changes in sales expectations.
- \* An analysis was made of the construction times for all the capital expenditures carried out by a firm during two sample periods. The first period's projects are dealt with as a single group of 80 projects, while the 79 projects of the second period are divided into two groups ((b) and (c)) so as to separate three projects substantially larger than the rest. In addition to the expenditures analyzed below, the firm from time to time builds a new plant or makes major renovations to one of its older plants. These projects may take up to two years to complete, although the average construction period for large projects is 12 to 14 months, preceded by two to four months of engineering.

<u>No. of Projects</u>	<u>Mean Size</u>	<u>Size Range of Projects</u>	<u>Mean Time from Approval of Appropriation Request to Completion of Project</u>	<u>Standard Deviation</u>
(a) 80	\$ 9,000	\$ 1,000 - \$40,000	2.1 months	3.2 months
(b) 3	\$191,000	\$160,000 - \$250,000	5.7 months	2.4 months
(c) 76	\$ 8,600	\$ 1,000 - \$45,000	1.5 months	1.4 months



- \* One manufacturing firm, which occasionally builds or rebuilds a large plant, has just adopted critical path techniques in scheduling the construction of their new plants. As a result, their newest plant will be completed faster than has been usual in the past. The timing is as follows:

Decision to build	November, 19A
Contract awarded	May, 19B
Arrival of machinery	September, 19B
Plant operating at 1/3 capacity	December, 19B
Project completed	May, 19C

- \* Officials in a firm in the mining industry outlined the timing of the expenditures on several of their new mine development projects. The firm's policy, once a decision has been made, is to open up a mine as fast as possible, although no clear idea exists of the elasticity of development costs with respect to a change in the construction period. The mines opened recently have each been developed in two years, with the open pit operations being completed sooner. There has been one large exception, a mine which did not come into operation until five years after the initial development decision had been taken. The project, which was a joint venture, was held up for a period of years while negotiations were going on about the appropriate size and ownership of the mine and mill.

One or two generalizations about construction times might be made on the basis of the interviews with large firms. Naturally the scope for a firm to make short-run increases in expenditures by taking on new projects will depend upon the time it takes to plan, engineer, and construct new facilities. The scope for increasing expenditures in the short run by accelerating outlays on construction in progress will depend upon the relative costs of alternative construction speeds, a matter to be discussed under point (7) below. The scope for decreasing expenditure in the short run will depend in part on the costs of delaying construction in progress, but primarily on the number of new projects which may, at any given cost, be postponed or abandoned. The effects of such postponements or abandonments on expenditures in the immediately succeeding quarters or years will depend on what the time pattern of outlays on the projects would have been had the projects been undertaken.



From the foregoing it follows that the effects of any given change in profitability on the investment of firms (such as electric utilities) whose expenditures are primarily on large projects requiring several years to complete will be spread over several succeeding periods. Firms with smaller expenditures completed largely within a single period may or may not be able to shift more expenditures; but it does appear clear that for such firms the lagged effects of the changes in spending will be relatively slight in relation to the effects in the current period. These firms will be able to decrease expenditures (in the current period) more readily than increase them if the planning time for new projects is considerable. For all firms the projects which are most easily shifted are those which require relatively little planning and have shorter construction periods.

(2) The size and complexity of planned and potential projects. If the firm's potential expenditures are separable units which can be considered more or less on their own merits, the possibilities for marginal adjustments in spending are obviously much greater than they would be otherwise. From this point of view the diversified manufacturing firm with a number of unrelated marginal investments has more freedom to alter expenditures than, say, the firm undertaking major resource development schemes whose component investments may be approved separately but are in fact closely inter-related.

(3) The relative attractiveness of planned and potential expenditures. For a firm to be able to increase spending, in the short term, on new projects, there must be within the firm a source of ideas for potentially profitable new investments. It is this reserve of investment opportunities which determines the extent that the expansion of firms can be increased through the use of monetary or fiscal policies. How can one determine the

number of investment opportunities that are marginally unattractive under present conditions but which might become attractive under slightly different conditions?

One possible approach is to assess the investment proposals which have been rejected or "put on the shelf" by firms, and to measure the extent to which these investments failed to appear sufficiently attractive. Chapters 1 and 2 of the study pointed out a number of reasons why the indicated rates of return on projects accepted or rejected fail to provide a good measure of their relative attractiveness, at least in the large majority of firms which do not make detailed analyses of the results of particular investment projects. It was concluded in Chapter 2 that the lack of formal project proposals indicating rates of return just below the margin of acceptability does not mean that there is a similar lack of marginal investment opportunities. Firms are, therefore, not likely to have lists of projects which are almost profitable under existing conditions and might be undertaken should conditions improve somewhat. The projects which are "on the shelf" in most firms include those awaiting the passage of time (see (4) below), renovation and "pet" projects whose contribution to profits is problematic, and, perhaps, some replacement expenditures. With few exceptions, the proposals for new investment are either already approved and awaiting construction, in the process of being assessed (a process whose duration is often inversely related to the attractiveness of the project), or in the minds of operating officials. An examination of rejected appropriations requests is, therefore, not a reliable guide to the relative attractiveness of planned and potential expenditures.

The interviews with large firms often included discussions about the number and nature of potential investment projects but, for reasons made clear in Chapters 1 and 2, it was not possible to obtain any very good quantitative evidence. Aside from the subjectivity of investment decisions, there is a conceptual difficulty in any estimate of the volume of "potential investments", as, presumably, each of the various "potential" investments would become attractive enough to undertake under any of a number of different sets of changed factor costs and product prices. Even supposing that firms were able to predict the effects of any particular change in costs on the profitability of particular investment projects, any estimate of the total of "marginal" projects for a firm would require precise specification of particular changes in factor costs or sales prices. This kind of argument appears to underlie the unwillingness of most corporate officials to attempt any sort of general estimate of the number and nature of marginal investment opportunities.

(4) The extent to which the rates of return on planned projects are sensitive to the passage of time. Some projects are worthwhile at one time, but would become unattractive if not taken advantage of at the appropriate moment. Firms producing fashion goods, certain chemicals, and certain minerals, in particular, noted that many of their investment projects were highly time-specific. This means in general that a project is either undertaken at a particular time or abandoned. The presence of this kind of project in a spending programme reduces its flexibility. Other projects require the passage of time to become attractive ventures, and therefore cannot be accelerated except at considerable cost. Utilities in particular suggested that although they often plan their capital expenditures some years into the future, the actual construction cannot be easily



accelerated, since there is no benefit to be derived from completed but unused capacity. Finally, for some projects the anticipated profitability is relatively insensitive to the passage of time. Renovation and maintenance items are the major expenditures of this type. Many executives suggested that so long as a certain total amount is spent in this way over a period of years, it does not matter greatly how the expenditures are distributed within the period. Thus, such expenditures are most likely to be the ones postponed or accelerated if there is some reason to make short term alteration in the volume of spending.

(5) The availability of personnel to engineer capital projects. In several firms the shortage of technical and supervisory staff is thought to severely restrict the firm's ability either to take on new projects at short notice or to expedite construction on existing projects. For example:

- \* In assessing the short run limitations on his division's capital expenditures, the manager stated that the operative limitation was usually the physical ability to spend allocated funds rather than limits on the quantity of funds available or ideas for worthwhile projects. As evidence for this, he offered the fact that it was unusual for the division to come very close to spending its entire capital expenditure allotment. He said the difficulty was not so much with the construction engineering staff, which could be augmented by the use of hired consultants, but with the volume of less technical thinking which has to be done within the organization itself before the idea reaches the final decision stage and during the period when the facilities are being constructed and put into operation.

The periodic shortage of engineering staff operates primarily to restrict the upward flexibility of spending. In a few cases the existence of an engineering staff with free time was given as a reason for not cutting expenditures on certain occasions, but in general it is only an increase in spending that would be restrained by engineering staff considerations. Naturally the effects of staff limitations on the ability



to undertake new projects will depend on the existing volume of construction. The fact that availability of staff was so frequently mentioned in answer to questions about investment incentives in 1963 may be in part due to the already high level of 1963 expenditures in the firms interviewed. Executives did often say, however, that in almost any year the availability of planning staff was likely to be the key factor limiting a rapid increase in investment.

(6) The costs of shorter or longer construction periods.

- \* A senior engineering official was asked about the cost consequences of expediting construction to take advantage of the 1963 accelerated depreciation, or to complete facilities before the sales tax on building materials and equipment reached 11%. He said that it was difficult to tell from the company's normal costing information, since their critical path programming procedures (which are used for all projects over 50,000 dollars, and many under) do not involve the construction costs. The critical path programme for each project is worked out on the basis of expected lead times for equipment purchase, and a "normal" rate of construction activity, except when the new facilities are being phased in with the existing capacity, at which time installation crews are scheduled to work around the clock. Although the company has occasionally obtained bids on the basis of alternative completion times in order to assess the costs of faster construction, they seldom if ever have used alternative construction times and costs in determining the timing of their construction. The engineer said that once the critical path programme had been worked out and a completion time scheduled, the firm was fairly strict about keeping to the schedule, often using (for critical phases of the projects) contracts with bonuses for faster completion and penalties for lateness.
- \* Another large firm is starting to use critical path programming in planning outlays on their major factory renovations and expansions. An engineering official said that the company never made explicit comparisons between faster construction times and higher costs. Their critical path method indicates the items whose timing is critical if the project is to be completed according to schedule. There is no consideration given to the costs of altering the timing of any of the critical or non-critical phases of the project. The official noted that there were computer programmes available which make explicit trade-offs between shorter construction times and higher construction costs, but that his firm was just making initial efforts at achieving optimal construction timing, and was not yet prepared to use the more sophisticated techniques.

Almost all of the firms interviewed were much less aware than the firms described above of the opportunities for varying the length of construction periods, and of the costs of doing so. Most construction bids are obtained on the basis of a specified completion date, so that the costs of alternative completion times are in general not known. The announced objective of most of the firms is "to get the job finished as soon as we possibly can", but, as indicated above, there is usually not much known about what the possibilities actually are.

(7) The availability of equipment and the effects of different delivery times on its cost. For example:

- \* A chief design engineer in a processing firm noted that in the case of larger projects the completion dates are related not so much to the time required for construction as to the delivery dates on new equipment.
- \* Discussing the effects of the step-by-step increase from June 1963 to December 1964, in the manufacturer's sales tax (on machinery and building supplies) in encouraging firms to get construction finished quickly, an official in a capital goods manufacturing firm said: "If our customers try to move ahead with their projects, we do not have very much cushion of excess capacity, and they will have to revert to imports."
- Q: "Does this increased pressure on capacity give you an incentive to accelerate your own expenditures?"
- A: "Yes, I think they could be accelerated a little bit, but... there are limits to what our suppliers can provide in that space of time...."

The availability of equipment and its cost will obviously vary considerably over the cycle. Most of the firms interviewed were more acutely aware of the lengthening in delivery times than of price increases as the equipment industries reach capacity. There were no cases mentioned where high equipment costs in times of capacity operation in the capital goods industries induced other firms to delay their expenditures in order to await lower prices. As the domestic equipment industry develops, the domestic level of activity is more likely to have greater effects on the

availability of equipment on short notice. In recent years most of the machinery used in manufacturing has been imported, thus loosening somewhat the link between high domestic investment demand and high equipment prices.

(8) The effects of current capital expenditures on the ability to meet current output requirements. In situations where the construction of new facilities involves the disruption of current production, the demand for output might limit the amount of construction which could be undertaken on short notice. There is no parallel limit to reductions in the level of investment. Most firms have enough different kinds of investment projects that other limits to the firm's ability to expand spending come into play before the demands for current output. Nevertheless, it is one more factor lying behind the generalization that, in the short run, capital expenditures can be altered downward much more easily than upward.

(9) The effects of capital expenditures on current earnings as shown on the financial statements. This matter was dealt with more fully in Chapters 1 and 3. There have been only a few instances where concern for statement earnings has been an active limit to short term increases in spending.

\* A divisional manager responsible for his quarterly profits said that the effects of capital expenditures (particularly the expense portion) on current reported earnings restrict the volume of expenditures which he is willing to undertake in any period, and especially so in periods of low sales.

The effects of expenditures on statement earnings act so as to restrict increases in spending. This factor was mentioned only by utilities and by firms measuring the performance of their divisions on the basis of



statement net earnings. In most other firms, the short term drop in statement net earnings caused by the expense component of investment projects usually does not limit short term increases in spending.

The importance of many of the factors listed above will depend on whether the contemplated shift of expenditures is toward or away from what is thought to be a normal level of capital expenditure for the firm. The factors which inhibit the short run expansion of capital expenditures will come into play most strongly when expenditures are already above average. Similarly, the costs (in terms of idle resources) of reducing expenditures become greater when the planned spending programme is already below normal.

#### CONCLUSION

This chapter has analyzed some of the reasons why firms might wish to make rapid changes in the volume of their capital expenditures. Examples were given of some of the changes that firms have made in response to changes in conditions, and some study was made of the more important limitations on the firms' short run flexibility of spending. There were several examples presented of the required planning and construction times for typical projects in several industries.

The distinction between postponement and abandonment has been seen to be a shadowy one, as most postponed projects reappear in slightly different form from that in which they were first presented, so that the original project has in a sense been abandoned. The distinction between acceleration of existing projects and the introduction of new ones is somewhat easier to maintain. Most firms think that they have relatively



little scope for accelerating expenditures, but have considerably more for taking on new projects of certain types. The ability to take on new projects varies considerably from year to year, industry to industry, and from one type of asset to another.

So much for what the chapter does contain. What of the omissions? There is little consideration given to the economic effects of a trade-off between flexibility in spending and the costs of production. We have suggested that certain types of project have almost always been the objects of short run cuts in spending with the same being true to a lesser extent for increases in spending. But we have not ~~analyzed~~ analyzed in detail the effects of short run changes in spending on the costs of production or on the subsequent pattern of capital expenditures.

There is scope for additional research into the timing of investment outlays, and for measurement of the costs and consequences of sharp changes in the volume of investment. On the basis of more detailed information it might be possible to predict the extent to which corporate investment could be increased or decreased (to the firm's advantage) in response to particular short term changes in costs or revenues. The evidence indicates that any more general estimate of the flexibility of corporate investment would probably be misleading.

## REFERENCES

- 1/ That is, there have been very few specific projects which have been delayed or abandoned, although monetary conditions have undoubtedly played a part in the determination of the annual budgets of some firms. There is also some evidence that changes in monetary conditions have affected the willingness of executives to propose or approve new spending plans. See Chapter VI of The Effects of Monetary Policy on Corporations, op.cit. at p. 353.
- 2/ T. Mayer's article "The Inflexibility of Monetary Policy", The Review of Economics and Statistics, Vol. XL, 1958, at p. 358, provides useful information, but it differs from the kind of analysis advocated in this study in that it examines typical planning and construction periods without reference to the possibilities for, or consequences of, accelerating or deferring expenditures in response to particular changes in costs or revenues.
- 3/ Additional examples (as well as several of the ones included in this study) are to be found in Chapter IX of Young and Helliwell, The Effects of Monetary Policy on Corporations, op.cit., at p. 405.

CHAPTER 5—INVESTMENT AND GROWTH: FACTORS INFLUENCING THE  
LONG RUN SCALE OF A FIRM'S CAPITAL EXPENDITURES

The discussion in earlier chapters has centred on the short run variability of capital expenditures, and assessed the scope firms have for making short term discretionary changes in their capital expenditure plans. This chapter illustrates the kinds of decision which affect the rate and direction of a firm's growth over a longer period of time.

In many studies of investment behaviour, the policies examined in this chapter are considered as given, as in combination they more or less define the short term objectives of the firm. In this study they are given separate treatment, since an assessment of the total effects of taxation must take account of the effects of tax measures on the basic policies governing the behaviour of firms. The policies described below may for most purposes be considered as stable in the short run, but subject to change over a period of several years. On occasion one or more of the general policies governing the rate and direction of a firm's growth may be altered quite rapidly because of a change in management or in external conditions. Even in these circumstances it usually takes several years for the changed policies to have their full effect on the firm's technology and growth.

The following pages do not contain any quantitative measures of the prevalence of various types of policy, nor is there any detailed account of the way such policies are evolved. Such a catalogue might or might not be useful, depending on whether the policies could be defined in such a way that operational inter-firm comparisons could be made. For most

purposes such information would not be necessary anyway, since what matters is the way the corporate structure reacts to the particular measures in which one is interested. The best evidence of such reactions is provided by a detailed knowledge of the effects of past changes. Conclusions on the basis of such evidence must, of course, be altered to take account of basic changes in the way corporations behave. The purpose of this chapter is to provide some insight into the kinds of corporate policy which have important effects on investment behaviour, some of the likely causes of changes in corporate policy, and the effects which alternative policies might have on the pattern of investment.

### FINANCIAL POLICY

A firm's financial policy determines the sources of finance to be employed, and the terms upon which various sources will be considered as alternatives. Information about financial policy can be derived from an examination of the financial history of the firm and from the attitudes and opinions of responsible officials. The kinds of finance which a firm uses will depend both on its current opportunities for capital expenditures and on the structure of financial markets. It would therefore be a mistake to assume that the financing pattern adopted by firms with given investment opportunities and sources of funds will not change when there are changes in the opportunities to invest or in the types of financing available.

A firm's financing may be said to demonstrate its financial policy to the extent that the designed changes in financing methods in response to changes in market conditions show some consistent pattern. The decisions described below cover most of the aspects of a firm's financial



policy. To the extent that the decisions are intended to remain unchanged for a considerable length of time, the firm's financial policy may be said to be rigid. The general case is for a firm's financial policy to vary gradually as financial markets develop, and as the existing pattern of financing of the firm shows itself to be less than optimal in the light of changing conditions. In the pages that follow there will be a certain amount of information presented about the sources of finance which have been used by the firms studied. There will also be some indication given of the likely effects on financing and expenditure of the adoption of certain alternative means of financing. There will be no attempt to describe in quantitative terms the prevalence of various types of policy or their likely aggregate effects on the volume of investment. In part this is because there is not enough information available to allow a thorough analysis to be made, but primarily it is because there is no logically satisfactory way of relating the policy of one firm to that of another. It was mentioned previously that a past decision to adopt a certain type of financing could be described as financial policy only so far as it represented the intention of management to act in the same way in the future. Although it may be possible to assess the response of any group or even all of the firms to a particular change in the relative prices of different types of finance, it would not be feasible to make a prediction which would apply more broadly. Perhaps the best way of assessing the relative importance of various financial policies is therefore to examine how particular changes in the tax structure have affected the methods of corporate finance. Chapter 6 contains such an analysis.

There follows in this chapter a brief general description of the more important types of financial policy:

### Willingness to Use External Funds

If a firm were unwilling to borrow funds or issue new equity, its level of capital expenditure would be set directly by the levels of internally generated funds and the dividend policy. Although several of the firms interviewed were less willing to make expenditures requiring the use of external funds than they were to make expenditures which could be financed internally, there was no evidence that this inclination was ever strong enough to eliminate the use of outside funds. Of the 70 large firms studied, all but 12 had undertaken some form of borrowing in Canada in the period 1954-63. Of the 12 firms which did not borrow, five were subsidiaries of U.S. firms obtaining finance entirely from their parent companies. The remaining seven non-borrowing firms (three of which are controlled in Canada) all have had substantial balances of cash and securities during the period 1954-63, and have not been in a position to consider the use of external funds. The evidence is therefore quite strong that the large firms studied have been willing to use external funds if required to finance growth or fluctuations in working capital requirements. The following paragraphs attempt to describe the policies which have governed the use of various types of external funds.

### The Use of Long Term Debt

With the exception of a few firms which try in general to arrange their expenditures so as to avoid incurring long term debt, the issuance of bonds is usually related to the firm's ideas of what constitutes an appropriate debt/equity ratio. 1/ Most investor-owned public utilities have developed fairly definite views about the extent to which the return on equity can advantageously be levered up through the use of long term debt. All of the nine utilities among the 70 large firms have issued long term debt obligations during the period 1954-63. Although several of the firms

were issuing bonds up to the prudential limits established by the debt/equity ratio thought appropriate by the firms or their underwriters, all of these firms have in general felt that the demands for their services were sufficiently imperative to warrant the issuance of new shares in order to allow spending while keeping the debt/equity ratio down to an acceptable level. The importance of the debt/equity ratio to the other firms which have issued long term debt since 1954 has depended on the volume of financing which they have wished to undertake and their willingness to issue equities or reduce dividends in order to provide a larger equity base. Table I indicates roughly the number of large firms which have borrowed on the basis of long term bonds since 1954. In fewer than 15 of those firms was the level of long term borrowing great enough at any time during the 1954-63 period that the debt/equity ratio assumed importance as a factor governing the level of long term borrowing. In some cases (especially for expenditures involving real estate, such as service stations and retail stores) firms chose to arrange for potential lenders to build facilities to the firms' specifications and then lease them on a long term basis, with or without an option to purchase at the end of the lending period. Most of the firms which have used leased rather than directly owned facilities have found that the funds thereby freed for other purposes were more costly than funds directly borrowed in the firm's name. 2/ The advantage in leasing is that the firm is able to obtain long term assets without incurring long term debt on its balance sheet. For the firms which have occasionally been borrowing up to limits set by the debt/equity ratio, this source of funds has proven to be worth more than its slightly greater cost.

For the few firms which have wished to borrow extensively on long



## CHAPTER 5

TABLE I

SOURCES OF FUNDS, 1955-62, FOR 39 LARGE FIRMS <sup>1/</sup>

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Equity Issues During the Year	New Debt Issues During the Year	Funded Debt Outstanding at Year End	Bank Loans Outstanding at Year End	Depreciation Allowances	Additions to Earned Surplus <sup>2/</sup>	Additions (Reductions) in Net Trade Credit Taken <sup>3/</sup>	Total New Funds Available for Expenditures <sup>4/</sup> (After Financing Increases in Accounts Receivable) (\$ million)
Number of Firms	Number of Firms	Number of Firms	Number of Firms	Total Depreciation Claimed During Year (\$ million)	After-Tax Profits Less Dividends Paid (\$ million)	(\$ million)	(\$ million)
1955	11 \$ 191.0	12 \$ 242.6	33 \$2,211.9	5 \$ 16.9	\$ 287.8	\$ 248.1	\$ 14.5
1956	12 220.2	15 215.9	32 2,343.4	5 35.2	346.6	282.4	\$1,013.5
1957	18 223.4	13 270.2	33 2,497.1	7 22.6	377.5	208.7	956.9
1958	15 64.8	10 301.3	33 2,710.8	7 45.2	380.8	75.0	(22.1)
1959	17 150.3	8 124.5	34 2,763.7	5 101.6	428.3	195.7	(6.3)
1960	15 55.5	9 267.7	35 2,968.7	6 54.0	437.1	173.7	(21.3)
1961	18 176.5	10 226.4	33 3,161.8	3 11.7	449.9	103.7	9.0
1962	19 188.7	10 152.5	33 3,012.5	6 17.8	487.6	217.3	(55.3)
Totals	27 <sup>5/</sup> \$1,270.4	25 <sup>5/</sup> \$1,801.1	35 <sup>5/</sup> \$ 800.6	13 <sup>5/</sup> .9	\$3,195.6	\$1,504.6	\$(75.3)
							\$5,969.9

<sup>1/</sup> The group includes all the large firms providing cash flow statistics, on a consolidated basis, to the Taxation Commission's Corporate Survey. See Table II of Appendix I for the industrial distribution of the 39 firms and a comparison of the group with the group of 70 large firms on which this study is based.

<sup>2/</sup> Column (6) is equal to total pre-tax profits for the year less income taxes and dividends paid.

<sup>3/</sup> Column (7) is equal to the change (+ or -) in trade accounts payable minus the change (+ or -) in trade accounts receivable. If the total is negative (enclosed in brackets), the large firms have increased their accounts receivable more than their accounts payable. Funds thereby lent to other firms are not available for expenditures on plant, equipment, or inventories, so that the bracketed amounts in column (7) are subtracted from the sources of funds when the "Total Funds Available" figure is calculated for Column (8). The first row is blank because year-end figures are not available for 1954.

<sup>4/</sup> Column (8) is the sum of all net new financing, including trade credit, less funds used to extend trade credit. Commercial paper borrowing <sup>(5)</sup> may be included in Column (4) but they may in several cases be omitted entirely. The figures in Column (8) are equal to the sum of Columns (1), (5), (6), & (7), plus the year-to-year change in columns (3) and (4). Naturally, year-to-year decreases in Columns (3) and (4) are subtracted, as are the bracketed figures in column (7).

<sup>5/</sup> These figures show the number of firms that have used the source of funds one or more times during the period 1955-62. In columns (3) and (4) the figure indicates the number of firms that have had long term debt and bank loans outstanding on at least one year-end date.



term but which have not had assets which could easily be leased rather than purchased, the precise effects of the established borrowing policies are difficult to assess. If there has been a reluctance to borrow because of the extent of existing debt, the effects of the reluctance would be more likely to evidence themselves by a smaller flow of new project ideas than by a number of projects being refused on explicitly financial grounds.

A final point should be made about the limits to borrowing. Many of the large firms which have been making heavy capital expenditures during the past decade (including more than 50% of all firms whose capital expenditures in the decade have exceeded the flow of internally generated funds) are controlled by one or more foreign firms. In these cases the borrowing of the Canadian company, whether done in Canada or abroad, has the backing of the parent company, even where there is no express parental guarantee. Such support from a large foreign firm (which is itself typically not borrowing heavily for its own operations) renders more or less meaningless the debt/equity ratio of the Canadian firm as an index of its ability to service a larger debt. Although the actual borrowings of the Canadian firm are sometimes limited by the parent company so as to conform with the usual market limits for a firm of that size, the restriction is usually subject to alteration on short notice. Alternatively, the parent company or companies may keep the ordinary outside borrowings of the subsidiary within conventional limits, and then finance the subsidiary's operations by some form of inter-company loan.

#### The Use of Short Term Debt

The primary sources of short term funds for large firms are trade credit, bank loans, inter-company loans, and commercial paper. The chief corporate borrowers of short term funds are the firms with large seasonal

variations in working capital requirements. In addition, there have been many more firms which in the past decade have come to use short term funds as a regular part of their financing simply because such borrowing is less expensive than other types of finance. As might be expected, corporate policy with respect to the borrowing and lending of funds on short term varies considerably from firm to firm. This is so because the opportunities for borrowing and lending short term funds have changed considerably over the past decade, and firms have shown themselves to differ considerably in the speed of their reaction to the changing circumstances. Since the availability of short term funds has on occasion influenced capital expenditures, at least in the short run, corporate policy with respect to short term borrowing may be considered as one of the more important aspects of financial policy.

#### TRADE CREDIT

With very few exceptions, the 70 large firms studied give substantially more trade credit than they receive, and very few of them either fail to take all discounts available for rapid payment or otherwise make attempts to secure more funds by increasing trade accounts payable. An exception to this generalization is provided by several subsidiaries of foreign firms which, from time to time, have run up trade accounts payable to their parent companies of as much as 10 or 20 million dollars. With these few exceptions, the large firms studied tend to give rather less net trade credit when funds become more difficult to obtain. Even when credit conditions in general are not tight, the large corporations usually make it a matter of policy to pay their trade accounts on regular terms rather than rely to any extent at all on trade credit as a source of funds.

BANK BORROWING

Almost all of the 70 largest firms have borrowed from banks at some time or other during the past decade. More than 25 of them make extensive and fairly regular use of bank credit. Most firms with substantial bank borrowings have substantial seasonal variations in cash flow; but it should not be concluded either that short term working capital requirements are the only ones financed by bank credit, or that variable cash flows are always financed in that way. Firms may choose, as a matter of policy, to finance short term cash requirements by selling off short term portfolio investments, running down cash balances, or using short term credits. As might be expected, the few firms which have accumulated very large liquid balances finance short term cash requirements by selling short term securities, while firms which have been drawing heavily on other forms of outside finance tend to provide for working capital fluctuations out of bank or other short term borrowings. Table I gives some idea of the aggregate amounts of bank credit used by the large firms whose cash flow statistics were submitted to the Taxation Commission. Very few of the large firms ever rely on bank borrowing to such an extent that they could not obtain more, if they wished, under most monetary conditions. In part this is due to the ease with which large firms can obtain bank loans in the United States or abroad if Canadian sources should prove inadequate. Although there have been a few instances in the past decade when the unwillingness of Canadian banks to extend more credit to large firms has caused the spending of those firms to be different than it would have been had bank loans been more freely available, the limits on bank borrowing have almost always been set instead by the firms themselves. One of the major reasons for the establishment of borrowing limits by the firms themselves rather than the banks has been the development of the



commercial paper market, to be described below.

#### COMMERCIAL PAPER BORROWING

Commercial paper will be considered in these paragraphs to comprise the short term notes (almost always of a term shorter than one year) issued by non-financial corporations in their own names. 3/ Commercial paper has accounted for almost all of the increase since 1958 in short term borrowing by large corporations. While bank borrowings by large firms have scarcely grown at all since the end of 1957, the volume of corporate paper has increased since that time from less than 60 million dollars to more than 300 million dollars outstanding in mid-1963. 4/ Excluding grain dealers, there were only about six non-financial corporations borrowing on the basis of commercial paper at the end of 1957, compared to 45 in 1963. Of the 50 to 60 regular commercial paper borrowers, 16 are among the 70 large firms on which this study is based. The greatest increases in commercial paper borrowings by large firms have occurred at times when interest rates have been low, when the gap has been largest between the rate of interest on commercial paper and that on bank loans. Except in times of credit stringency, the banks have tended to look with disfavour on the increasing use of commercial paper by their largest and most secure clients. Corporate financial policy has been subject to a gradual change as the opportunities for commercial paper borrowing have become more widely known and the market has gained stability. The extent to which a corporation is willing and able to issue commercial paper has become for some firms as much a part of their negotiations with their bankers as is the establishment of a line of credit for direct borrowing. Most commercial paper borrowers have been expected by lenders to have unused lines of bank credit (even if unofficial) sufficient to repay all



their outstanding notes if renewals were not possible when the notes fell due. Thus although the development of the commercial paper market has given corporations an alternative to bank borrowing which has served to make them more able to affect the size and conditions of their bank borrowings, the use of commercial paper has itself required a certain amount of bank co-operation. The over-all effect of the development of the market on the financial policies of large corporations has been to lead many of them to rely more on short term funds as a regular source of finance, and to raise their estimates of the amounts of finance which could be obtained in the short term market without endangering the financial respectability or solvency of the firm. Considering all sources of short term funds together, it would appear that corporations have come to be more flexible in the use, both as borrowers and lenders, of short term funds. For one thing, the debt/equity ratio as such appears to have less influence on the volume of short term borrowing than on the amount of long term debt which the firm is willing to issue. Some firms refer instead to the "appropriate level" of short term borrowing. This concept appears to be more flexibly applied than is the debt/equity ratio, but either it, or some approved short term borrowing limit, on occasion has had a restraining influence on spending:

- \* When planned capital expenditures or inventory increases exceed the expected internal generation of cash, the firm increases its bank loan or issues commercial paper; but such debt cannot go far beyond its "normal" levels before steps are taken to conserve cash. (The steps have included marginal reductions in those expenditures not showing an explicit rate of return.)

In the short run, however, the fact that short term borrowing may be increased immediately and then reduced or extinguished by the end of the financial year (when statements are prepared showing debt/equity

ratios and other measures of solvency) gives many firms a freer access to short term than to long term borrowing. As a consequence, there is probably a greater willingness to undertake expenditures which would be covered by an extension of short term debt than ones which involve the incurring of long term debt or the issuance of new equity.

### The Issue of New Equity Shares

If a firm is faced with profitable investment opportunities requiring more cash than can be provided by borrowing on the firm's present equity base, then the amounts of funds which are raised by sale of new shares or reinvestment of current earnings will govern the firm's rate and direction of growth. In view of the general willingness of those large firms with apparently profitable investment opportunities to borrow up to a certain proportion of their equity base, financial policies with respect to the issue of equity shares and the reinvestment of earnings are perhaps the most important financial policies affecting the firm's rate of growth. Table I shows the amount of new equity funds obtained by certain large firms during the 1955-62 period. Most of the new equities have been issued either by new firms backed by large foreign firms or by utilities. Most of the firms which have not issued equities have expanded their equity base by the retention of earnings. Very few of the firms expressed a general unwillingness to issue new equities if the flow of funds from retained earnings and borrowings should prove inadequate to finance expenditures. They consider that other factors have provided more active limits to their expansion during the past decade. There are, however, some firms whose policies of the types described below have amounted to an effective rejection of new share issues as a source of funds, and others whose policies indicate a preference for other forms of finance.

### PRIVATE VERSUS PUBLIC INCORPORATION

The rate of growth of small corporations is frequently determined by the decision to remain a private corporation. <sup>5/</sup> There are very few private corporations among the largest firms, and in only one or two cases could the decision not to "go public" be seen to have consequent effects on the rate of growth. Most of the private corporations are in fact wholly-owned subsidiaries of foreign firms. As will be illustrated in the following paragraphs dealing with dividend policy, one of the major advantages of the private corporation is that investment decisions need not be so closely related to the level of statement net earnings, nor to the maintenance of any particular dividend policy.

### DIVIDEND POLICY

With the exception of the private corporations referred to above, virtually none of the large firms think themselves able to alter their dividend policy significantly in order to provide funds for investment in real assets. Most officials are of the opinion that a reduction of the dividend, or a prolonged failure to raise the dividend in the face of larger earnings, would have such ill effects on the share price and on the ease of selling subsequent equity issues that the relatively small amount of funds thereby obtained would not be worth its implicit cost. There have been a relatively few occasions when a dividend increase has been delayed for a short period in order to ease the cash position during a period of credit stringency or heavy expenditure. In general, officials interviewed expressed a desire always to maintain the dividend at its highest previous level, and to increase it as soon as was warranted by a higher trend of earnings. Despite this apparent unanimity of executive opinion about the general nature of a desirable dividend policy, the firms



take rather different views of the appropriate proportion of current earnings to be paid out as dividends. The sharpest difference is perhaps that between the utilities and closely-held subsidiaries, with other firms falling somewhere in between. Some of the large subsidiaries have gone for several years without paying any dividends, even after the time when they started to have substantial net earnings. The utilities, on the other hand, which rely on periodic equity issues in order to finance their growth, maintain a consistently high payout ratio in order to keep their share prices high. Other corporations apply more or less the same principles; those firms which are counting on equity issues in the near future maintain a relatively high dividend, while other firms may pay a lower dividend in the hopes that the funds so reinvested will prove enough to finance growth without recourse to the equity market. Once a particular payout ratio has been adopted, firms appear to act in accordance with it. The only exception to this is provided by firms which have reached a certain stage in their growth and find that with the established payout ratio large liquid balances are being built up. Such firms might increase their payout ratio as well as attempt to search for new direct investment opportunities of other types.

#### MAINTENANCE OF CURRENT EARNINGS

Firms which make frequent equity issues often attempt to plan their capital expenditures so as to avoid fluctuations in reported net earnings. Since a substantial fraction of the expenditures related to a plant expansion can be charged against income for tax purposes in the initial years of the plant's operations, a large expansion programme often reduces reported net earnings considerably. Firms which do not wish to make equity issues in the near future have shown themselves to be less concerned



about the effects of capital expenditures on the reported net earnings, and therefore are likely to adopt a different investment programme. Thus a firm with a pattern of financing involving frequent equity issues is likely to have more stable capital expenditures than a firm which invests according to the anticipated profitability of investment projects so long as the total cash requirement for expenditures on the attractive projects is not greater than the sums available from retained earnings and borrowing. Officials in several utilities noted that the effect of a particular investment project, and the effects of the entire expenditure programme on the statement net earnings, were important factors in deciding which expenditures would be undertaken in a particular year. In other firms the level of statement net earnings was seldom referred to as being of major importance to expenditure decisions, except in those cases where statement net earnings were used as a measure of the performance of the management of the various divisions of the firm. (See Chapter 3, page 73.)

### Conclusion

The preceding pages have attempted to illustrate the various aspects of a firm's financial policy, and to indicate how various financial decisions might be expected to affect the expenditures of the firm. The fact that particular financial decisions can be seen to affect expenditure plans in certain ways should not be allowed to obscure the basic fact that for most large established firms the terms on which various types of finance can be obtained alter the way in which new finance is obtained, but not the basic character of the expenditures themselves.

## MARKETING POLICY

### Range of Products

There is usually within each firm a general understanding of "what is our line of country", a view which defines the search area to officials at all levels responsible for investigating new product possibilities.

In some cases the range appears very wide indeed:

- \* Officials in one firm stated that their investment policy is to invest in any project whatever its nature, so long as it promises an adequate return. They explained that most of their investment has been in one field because of the past concentration of their research activity in that field. In addition, they are willing to accept a lower estimated return on products they are familiar with since their experience in the field allows them to predict the outcome of those investments with more assurance.

In others, it is strictly circumscribed, whether by technology, tradition or the decision of a parent corporation.

### Market Share

The target market share is a nebulous concept in many firms; in one firm three different answers were provided by three different officials asked about the size of the firm's self-imposed market share restriction. A target market share may serve to limit investment because anti-combines action is thought to be related to market share. For the large majority of Canadian firms whose market shares are not subject to this kind of discretionary restriction, the differences in approach to market share expansion reflect the type of market, the degree of product differentiation, the relative size of the firm, and a general policy about market participation. In most firms the policy toward desired market share is best defined by interpreting their pricing policy and the extent of selling efforts.

### Geographical Extent of Markets

This is a policy which is as often determined by the interests of management and the tradition of the firm as by the relative profitability of new market areas as compared with established markets. Whatever the source of the policy, it frequently has a substantial effect on the kind of project which will be suggested to senior management. The policy towards exports is particularly likely to be set by senior management, since the development of knowledge about export opportunities usually depends on a prior management decision to spend money to investigate foreign market potential.

### Market Research

A firm's policy with respect to its range of products, market share, and the geographical extent of its markets should serve to define its policy towards expenditure designed to develop new markets or increase old ones. This latter policy indicates more than the formal policies towards market participation, however, as it may provide a measure of the intensity of the firm's desire to develop new markets. The allocation of resources to establish an export sales division or to set up a domestic market development group reveals more about the firm's intention to develop new markets than would policy statements. Discussions about the decision to spend money on market development indicated that it is in general based on a vague feeling, often inspired by low profits in existing markets or large cash balances having no attractive alternative use, that new markets might produce higher profits. Actual expenditures on activity officially described as "market development" are not necessarily a reliable guide to the firm's policy with respect to market expansion, since

the kinds of problems involved in developing new markets are often solved without the use of specialist departments. The assignment of responsibility for market development to certain executives, however, whether done formally or not, does indicate how important market expansion is thought to be, even if there is no good measure of the extent of the total effort directed toward market expansion.

### ENGINEERING STAFF

Perhaps the most frequently mentioned limit to increases in spending in a relatively short period is the supply of specialized engineering staff. Although it is not often considered as such, the decision to build and maintain a planning and engineering staff of a certain size is itself a primary determinant of the short run flexibility of expenditures and the longer run rate of growth. According to the descriptions of some officials, the decision to change the size of the engineering staff involves as great a commitment and as long a "construction lag" as the purchase of major plant facilities. One firm estimates that it takes three years to teach an engineer the specialized techniques of the industry. The firm's supply of engineering and technical talent can be augmented to a certain extent by employing outside consultants and independent engineering firms. The scope for this kind of adjustment depends on the complexity and degree of specialization of the firm's facilities, and, as well, on the availability of outside engineering, which varies with the level of expenditures of the industry as a whole.

### POLICY RELATING TO GROWTH BY ACQUISITION AND MERGER

A type of investment decision which has received virtually no consideration in earlier chapters is that of acquiring facilities by



purchasing an existing business. These investments are not accounted for as "capital expenditures", even though for the purchasing firm the net result may be similar to the construction of new facilities. It is true that the purchase of going concerns involves a different approach to market growth from that described in the preceding paragraphs, but the results are often similar enough that the two approaches are alternative. There is no space here to give adequate consideration to factors influencing decisions to merge, or to the resulting changes in the pattern of capital expenditures. The subject of growth by purchase, in whole or part, of going concerns as an alternative to capital expenditures is mentioned here only because the general corporate policy with respect to mergers and acquisition obviously affects the growth of the firm and its pattern of capital expenditures. The possibility of corporate growth by merger drives a wedge between investment in fixed assets and the growth of the firm. The only justification for ignoring this type of corporate growth in this study is that our primary concern is with the construction of new fixed assets in the private sector as a whole; transfers of ownership of existing businesses can thus be treated as cancelling items. The chief difficulty with this procedure arises because the large firms being studied often view merger as an alternative to purchase of new assets, with the mergers therefore not cancelling out for the firms studied.

#### RESEARCH AND DEVELOPMENT EXPENDITURES

There is a general lack of knowledge of the determinants of decisions to allocate funds to research and development. Even less is known about the effects of such expenditures on the profit opportunities of individual

firms, industries, and the economy as a whole. 6/ The most recent empirical evidence tends to support a view that research and development expenditures, acting through changes in productivity, have a significant effect on the profitability of the firms making them. 7/ The Canadian interview evidence produced corroborative evidence that research departments, once firmly established, have found it relatively easy to be demonstrably successful enough to gain funds for further expansion. Evidence relating to the results of research and development efforts do nothing to explain the causal factors affecting the amount of funds devoted by corporations to research and development. One study with U.S. data has suggested that changes in profits do not appear to influence research expenditures greatly, 8/ and the Canadian interview evidence, as limited as it is, provides rough corroboration that within a given industry firms do not relate their expenditures on research and development closely to current profits. There has been little research done, either in Canada or abroad, on the factors relating the technology and market structure of an industry with the organization of its research; the extent to which technological information is shared, obtained by joint effort, derived from government agencies, or developed and guarded closely within the firm. 9/

Canadian statistics relating to research and its effects on a firm's profitability are difficult to obtain. D.B.S. figures indicate that in 1959, 54 million dollars were spend in Canada on research by the 58 largest companies doing research (all with sales over 50 million dollars). This amounted to .54% of the 1959 sales of these companies. This percentage varied considerably among industries, ranging from electrical apparatus and supplies at over  $1\frac{1}{2}\%$ , and chemical products at  $1\frac{1}{2}\%$ , to

food and beverages at one-tenth of 1%. 10/ These figures refer to research and development expenditures in Canada. Payments for research done outside Canada by affiliated companies are not accounted for on any comparable basis, but probably exceeded 10 million dollars in total for the firms with sales over 50 million dollars. The capital expenditures in 1959 on research facilities amounted, for all firms doing research, to 10.6 million dollars, 11% of total expenditures on research and development. Since 1959, there has been a substantial expansion of research activity, with financial support provided from several outside sources. 11/ The breakdown of research outlays between firms, trade organizations, parents and subsidiaries, and the effects of government research and subsidies all require further empirical research.

Analytic and statistical evidence from other countries and an examination of the activities of a sample of Canadian corporations indicate that the results of research and development activities are closely enough related to investment possibilities and actual capital expenditures that the decision process governing the scale of research activity is a basic determinant of the long run scale and direction of the firm's growth. The link between research expenditures and profit opportunities is not, however, so obvious that corporate planners use any measure of it to decide either the appropriate amount or the distribution of research and development expenditures. This has led to the adoption of a variety of rules of thumb for determining the appropriate level of research expenditures, and an equally prevalent dissatisfaction with the value of the measures adopted.



- \* An administrator of research stated that his requests to senior management for research funds were based on a comparison of the firm's research expenditures, as a percentage of sales, with those of the other firms in the industry. He argued that this method ignored the basic reasons for research as well as the opportunities for research open to the firm at a particular time.
- \* An executive responsible for research and product development reported: "We authorize a certain number of people rather than a specific group of projects. I don't think that there is any good single yardstick to use in setting the size of the budget. There are lots of yardsticks—a certain percentage of sales, a certain percentage of earnings, and so on—but companies vary so much that it is dangerous to use any particular yardstick. We really do it by saying 'This is the size of research budget we should support today.'"
- \* Other firms do not attempt to relate research expenditures to sales figures. One senior executive who has recently spearheaded a successful campaign to have a substantial research programme established denied that there could be any financial justification for research. "How could there be?....Research...must be like motherhood—you just have to believe in it."

There is some evidence that those firms which have had research programmes established for some period of time feel more confident in their judgment that a certain minimum of expenditure is justified, although perhaps not much more confident than other firms of their assumptions about the benefits to be derived from marginal research expenditures. As a result, some firms have on occasion found themselves having made basic decisions to allocate funds for research without having developed a plan for their use:

- \* One executive responsible for research reported: "There's a lot of popularization of research and development lately. Everybody wants to do research; but you have to know what to do your research on. I can assure you that we are far more skilful in doing the research than we are in choosing a research project."

Even those firms which have developed the necessary staff and have a number of possible avenues of apparently profitable research open to them have periodically run into difficulties in establishing the amount of



research warranted for a particular type of product in the light of its market potential:

- \* "It's very easy to get carried away by brilliant technical work without taking a seasoned look at the market. On one famous occasion we undertook a sizeable development effort on a high-priced intermediate product used in small quantities in another industry. We had a raw material base, and we felt we had some manufacturing know-how, and we certainly had the technical research skills to develop methods for making the product. After our elaborate research programme was completed, we decided to take a closer look at the market. We found to our horror that there were only three customers and two of them had their own sources of supply—that sort of thing—so we threw up our hands and cancelled the whole project. If we had had our present system these factors would have been evaluated very early in the game, and we never would have done the research."

As these problems have arisen and been dealt with in firms developing research programmes, the derivation of a research programme has come to have much in common with capital expenditure decisions. A closer parallel can, of course, be drawn between industrial research and development expenditures and exploration expenditures in the mining and petroleum industries; both types of decision have historically been made on the basis of hunches and intuition, but are coming to be more precisely related to the specific goals and requirements of the productive sectors of the business, and to the realized success of previous research and exploration activities. As with mining exploration, although to a greater extent, successful industrial research usually provides benefits which extend beyond the investing or innovating firm. This has provided a basis for pooled research, whether within a group of companies, a trade organization, a country, or an international industry. These external economies of successful research have also led to government subsidization of industrial research. All these developments have made more complex the decision within a firm to establish research facilities in order to expand the range of investment opportunities, since the fruits of research activity have come

to be available to the firm, on different terms, from a number of different sources.

Firms that do not undertake research and development activity either get information from affiliated firms in other countries, describe themselves as "too small" to undertake research, or consider their industry to be inappropriate for such activity. Considerable discrepancies in attitudes towards research exist between firms which are ostensibly quite similar in terms of size, industry, and financial strength. A good part of this discrepancy appears to be explainable, on the one hand, in terms of the vagueness of the benefits of research which has not been undertaken, and on the other, by the enthusiasm of established research departments.

A satisfactory analysis of the determinants of research expenditures, the economies of scale and co-operation in research, and of the effects of research on investment opportunities would require more adequate data and a fuller treatment.

#### ATTITUDES TOWARD UNCERTAINTIES

The entrepreneur's willingness to make expenditures on the basis of incomplete information is reflected in the kind of allowances for uncertainty studied in Chapter 2. But formal rules for decision-making, particularly where subjective allowances for uncertainty are required, do not begin to account for the variety of possible approaches to an unknown future. The matter is of concern at this stage in the analysis because there are significant differences among firms in their attitudes toward risk. It may seem strange that management groups in large firms should demonstrate a consistent corporate attitude toward uncertainty.

But such corporate attitudes are found, and differ among firms sufficiently to merit separate consideration as a longer run determinant of capital expenditures policy:

- \* "I think of the conservative firm (our firm may be an example) as one in which there is more emphasis placed on the continuous integrity of the company than on immediate increases in the profits accruing to the equity holder." The comment was made in response to a specific question about financial policy, but the same attitudes were seen in subsequent discussions to apply as well to the provision of new capacity for domestic or export demand, and ventures into new products.
- \* Senior officials in another firm stated that their approach to uncertain profit opportunities was quite different from that indicated above. "We travel in elephant country", said one executive, and went on to explain that his firm was always willing to risk major losses in search of very large but uncertain rewards. He noted that other firms in his industry preferred as a matter of policy to undertake only projects with a more secure (but probably smaller) prospect of gain.

Given that there are differences among firms in their willingness and desire to take risks, 12/ that fact still does not aid the analysis of investment behaviour unless it is possible to distinguish certain consistent modes of behaviour which reflect differences in risk preference and provide a basis for predictions of future reaction to investment opportunities. There are a number of policies which demonstrate a firm's desire to achieve stability or predictability in their expected profits, several of which have been discussed in earlier sections.

### Diversification

Broadening the firm's range of products or markets is often viewed as a means of achieving a greater stability in average returns. The policy may be used as well in the firm's investment in securities, although diversification in the purchase of securities indicates little or nothing about the firm's approach to uncertainty in its operation of productive facilities. The firm's risk preference may also affect the methods of



diversification; the purchase of a going concern in a new market area provides a more predictable entrance into a new market or product area.

### The Use of Leverage

The term leverage is mainly used to describe the use of fixed interest borrowing to increase the expected return on equity. For example, the use of leased rather than owned facilities is a way of leveraging up the return on equity in a business where the expected profit level on operating assets is above that obtainable from investment in buildings. The common characteristic of the procedures referred to here as leverage is that they increase the expected average value of the rate of return on equity, but at the same time increase the range of dispersion of possible outcomes about the expected value. The firm which does not use leverage is, thus, one which prefers a lower but stable return to a higher, less stable one (usually accompanied by a greater chance of bankruptcy). The extent to which various forms of leverage are used will depend not only on the firm's risk preference, but also on its ability to obtain capital of various types, and on the expected level of profits on its basic operations.

### Partnership Interests

Firms which take part ownership in large or foreign ventures usually do so for a variety of reasons, prominent among which is the desire to minimize risk. This is done through diversification (a firm with a given supply of financial resources can gain a wider representation if it takes partners rather than venturing alone), or on occasion by taking on partners whose special knowledge of a product or market area increases the expected value of the return and decreases its possible deviation from the expected value.



- \* A senior executive in a manufacturing firm stated that it was his company's policy to take on equal or majority partners in foreign ventures. This policy reduces risk in several respects:
- (a) The difficulties of establishing an initial market share are eliminated if the foreign partner is already producing.
  - (b) In many of the developing countries the risks of nationalization or confiscation are considerable. These risks are reduced tremendously if a well-placed domestic firm has equal or majority control of the operation.
  - (c) There are important differences between the markets in various countries. Local partners can better assess market potential and make more certain estimates of the type and amount of product that can be sold.

The executive indicated that taking on foreign partners probably increased the average size of the company's return as well as making it much more secure. He suggested that the reductions in risk thereby achieved were so great that partners would be taken on even if it were to mean a slight reduction in the expected return for the company.

Firms differ considerably in their desire to share risks with partners. To a certain extent the willingness to undertake joint ventures reflects a range of investment interests wider than the operating knowledge and experience of the existing management:

- \* One official said that his firm would proceed with any project, almost regardless of size, which was within the company's present field of operations. If there was an opportunity to invest in a less familiar process (he gave several examples of related products) the firm would be willing to share the development with another firm with more experience. In the case of radically different types of investment, the company prefers to invest only a relatively small amount if their partners do not have more expertise than they do. In these cases the company's investment is kept small solely to reduce the size of the possible losses.

### Speed of Growth

Since uncertainty is based on lack of knowledge, many firms view a policy of slow and stable growth as a means of decreasing uncertainty, since a slow process of growth allows the firm to use only those processes with which they are relatively familiar. Officials often emphasize that the restriction of expansion to those products and market areas with which

the firm is familiar not only decreases the possibilities of unfavourable outcomes, but also increases the expectation of gain, since they are better able to choose the appropriate techniques of production and distribution. This applies to the range of products as well as to the geographical extent of markets.

The policies described above illustrate, with the possible exception of leverage, that actions taken to decrease the variations of possible outcomes from their estimated values may not necessarily be at the expense of a decrease in the expected values themselves. Nevertheless, an examination of particular policies discloses that variations among firms often reflect a consistently different preference for higher as opposed to more stable returns, or, what may often amount to the same thing, faster as opposed to more stable growth. 13/

That firms should differ consistently in their attitudes toward risk is not surprising. A firm which has expressed an intention to invest in the most risky and highest yielding projects will have attracted shareholders who prefer that type of investment. Similarly, the firms which are more concerned with secure, stable, and well-balanced growth will likewise have attracted shareholders with the same preferences. Thus a firm which considers the interests of its existing shareholders will under most circumstances be inclined to follow an investment and financing policy similar to that which has been followed in the past. A careful analysis of the firm's methods of dealing with uncertainty may therefore provide a fairly reliable guide to the way the firm is likely to act in the future. This consistency in the "character" of the firm may thereby provide some basis for prediction, even though the firm's way of making decisions under uncertainty may not be analyzable in any precise terms. 14/

CONCLUSION

All of the foregoing policies are the result of basic decisions taken by firms with respect to their rate and direction of growth. If the types of policy described above can be ascertained for any group of firms in a certain period, then the capital expenditures of those firms become much easier to predict. Outside influences on the firm can be analyzed in terms of their effects on particular policies, and in turn on the likely pattern of capital expenditures.

If monetary and fiscal policies are thought to have both stability and growth effects, then the distinction between short term flexibility of capital expenditures and the factors affecting long term rate of growth of the firm will prove valuable in assessing specific fiscal policies in the second half of this study.

This chapter has analyzed the determinants of what might be referred to as "primary investment decisions", since they set the limits to the rate at which capital expenditures will be undertaken in response to given profit opportunities. This view of long term financial and technical growth policies as basic determinants of expenditures will be drawn on heavily in the analysis in Part Two of this study, which will attempt to spell out as clearly as possible the effects of specific tax measures on the long term determinants of growth as well as on the short term stability of expenditures.



## REFERENCES

- 1/ The debt/equity ratio is commonly defined as the ratio of total debt (including accounts payable, bank loans, and long term debt) to net worth (including share capital and retained earnings).
- 2/ With certain exceptions: because of U.S. tax advantages for certain U.S. citizens in owning foreign real estate, it has been on occasion possible for Canadian firms to obtain premises designed to their specifications and leased to them on terms involving an effective interest rate as low or lower than that the firm would pay on a bond issue.
- 3/ Commercial paper does not include notes issued by corporations to banks as security for bank loans or overdrafts.
- 4/ The data referring to the development of the commercial paper market were obtained from a survey conducted in mid-1963 on behalf of the Royal Commission on Banking and Finance. The results of the survey are published in the Appendix Volume to the Report of the Royal Commission on Banking and Finance, Ottawa, Queen's Printer, 1965.
- 5/ Under the Dominion Companies Act (R.S.C. 1952, c. 53, s. 3(j)), a private corporation is not allowed to have more than 50 shareholders. This Act became the Canada Corporations Act by Bill S -22, 13 Eliz. II, 1964, in force July 1, 1965.
- 6/ The most important analysis of the problem in the context of the modern industrial society is perhaps Joseph A. Schumpeter, in e.g., Business Cycles, McGraw-Hill N.Y., 1939. More recent theoretical and empirical contributors include C.F. Carter and B.R. Williams, Industry and Technical Progress, Investment in Innovation, and Science in Industry, Oxford University Press, London, New York, 1957, 1958, and 1959 respectively, and The Rate and Direction of Inventive Activity: Economic and Social Factors, National Bureau of Economic Research, Princeton University Press, 1962.
- 7/ Jora R. Minasian, "The Economics of Research and Development", in N.B.E.R., The Rate and Direction of Inventive Activity; Economic and Social Factors, 1962, pp. 93-141.
- 8/ Ibid., pp. 118-121.
- 9/ It is perhaps not surprising that tentative analysis indicates the prevalence of shared technology within industries (such as pulp and paper) where Canadian firms are competing in world markets against foreign technology, and less in chemicals, where the Canadian firms are subsidiaries of foreign corporations competing against each other



in many rapidly changing markets. There are indications also that common technology will tend to be adopted throughout an industry where there are substantial economies of scale in the production of the relevant capital goods, leading to the concentration of their design and supply in the hands of a small number of firms.

- 10/ See Dominion Bureau of Statistics, Industrial Research-Development Expenditures in Canada, 1959, Ottawa, 1961. In their questionnaire, D.B.S. defined the concept of industrial research-development to "... [comprise] activities ranging from pure research intent upon obtaining new knowledge in the life and physical sciences,...and bringing them to the stage of production. Such activities as market and sales research...are excluded..." See page 31 of the D.B.S. report for details of the definition. More recent statistics are contained in D.B.S., Industrial Research and Development Expenditures in Canada, 1961, Ottawa, 1963, although this publication does not separate expenditures by size of firm.
- 11/ See chapter 8 of Part Two for a description of the effects of the various research incentive schemes.
- 12/ F.H. Knight in Risk, Uncertainty, and Profit, Houghton Mifflin Company, Riverside Press, Cambridge, Chapters VII and VIII, distinguishes between "risk", where the distribution of the outcome in a group of instances is known either a priori or on the basis of statistics, and "uncertainty", to describe situations which are unique in such a high degree that it is impossible to form a group of instances. This distinction is not employed here (since it raises more problems than it solves), and "uncertainty" is taken to be a lack of certainty about the course of events and "risk" to be some measure of the likelihood of outcomes different from those expected or desired. In the case of investment projects, the "risk" may be defined in terms of the range and distribution of all possible outcomes, or of the unfavourable outcomes alone.
- 13/ These differences appear to represent most of what Tibor Barna refers to when describing "the quality of management" as the key way of differentiating the behaviour of industrialists (Investment and Growth Policies in British Industrial Firms, Cambridge University Press, 1962, Chapter 5). It would seem preferable to define the differences, as we have done, in terms of specific policies whose nature and stability can be assessed, and whose effects on the size and direction of investment can be more easily established.
- 14/ The major difficulty with the use of detailed studies of decision-making in generalizing about investment behaviour is that it is difficult to find some measure of behaviour by which firms can be compared. Perhaps the best way of determining the firm's risk preference is to make inter-firm comparisons (within an industry) of the average size and stability of net profits. Naturally any measure which is based on statement net earnings will provide a biased indicator of profit expectations and realizations, but it might nevertheless be a useful index. Inter-industry comparisons might be made in the same way.

## CHAPTER 6 — CONCLUDING COMMENTS — PART ONE

In the first five chapters we have examined in some detail the methods used by large firms in choosing investment programmes, and have assessed a number of factors influencing the size and timing of capital expenditures. Since the purpose of these chapters has been to present a full range of evidence, to suggest hypotheses rather than to marshal evidence in their support, no attempts have yet been made to draw conclusions about the basic characteristics of investment behaviour. But now we must address ourselves to the immediate purpose of the study, which is to analyze the effects on investment behaviour of certain taxation policies. Can we draw from the chapters of Part One a framework for the analysis of the effects of particular tax policies? In each of the preceding chapters we have searched for general characteristics of the investment process, and quantitative measures of the factors governing investment decisions. What have we achieved?

Ideally, the analysis of monetary and fiscal policies would be based on a clearly specified micro-economic investment function in which the relevant monetary and fiscal policies appear explicitly either as variables or parameters. But such a function is not at hand, and our survey of investment behaviour provides more reason for scorning the available functions than grounds for establishing a suitable replacement. It is obvious a priori that simple unlagged investment functions based on accounting profits, capital stock adjustment, and liquidity variables, are not likely to be of much use. For one thing, they do not allow

taxation and monetary measures to be brought explicitly into the function. Once investment decisions have been studied in detail, it is clear that such functions do not embody the essential characteristics of the actual investment process, and are likely to obscure the differences in the decision procedures governing different types of investment. When the profits and/or accelerator models embody decision and construction lags they come closer to describing the characteristics of the investment process, but even then the explanation is based on only a few of the factors which we have seen to have substantial independent importance. The distributed lags used often appear to be mechanistically derived from the characteristics of particular time series, rather than to be based on the actual lags at various stages in the decision process. Until more precise micro-economic functions can be found, however, our micro-economic policies will have to continue to be assessed using relatively crude aggregate investment functions. For many purposes, in fact, simple models will continue to serve much better than a more complex function whose parameters require almost continuous re-estimation. But for the comparison of particular tax measures, we must look elsewhere.

Could we not look at the formal rules governing investment behaviour, and compare taxes on the basis of their effects on rule-determined decisions? In Chapter 1 we examined all the rules used as tools in the assessment of investment opportunities, and found that the rules themselves provide a misleading guide to the investment behaviour of the firms using them. In many firms formal investment criteria are either non-existent or ignored. In Chapter 2 we examined the sources



of data for investment decisions. The examination was intended to measure the accuracy of various kinds of cost and revenue estimates, and to see how the uncertainty of these estimates affects the selection of an investment programme. Chapter 2 is of considerable importance as it goes far toward making coherent the surprising variety of behaviour described in Chapter 1. On the basis of the evidence in the two chapters, it would appear that any adequate explanation of investment behaviour must explicitly recognize the uncertainty surrounding predictions of the costs and consequences of investment decisions. Chapter 2 indicates that the investment procedures described in Chapter 1 are as various as they are, and are used in such a variety of ways, because firms have not had, or have not used, uniformly reliable information about the effects of their decisions. In many cases the firms have had fairly well defined subjective expectations, but these are seldom translated into comparable written estimates. In most of the firms studied, the relationship between subjective expectations and recorded estimates is becoming closer, usually because additional care is being devoted to the preparation and follow-up of rate of return estimates, and sometimes because the more accurate records of past experience provide an improved basis for subjective estimates of profit opportunities.

From the first two chapters it would appear that the subjective expectations, which are the basis of investment decisions, are more complex than are the estimates that are usually involved in rate of return calculations, and that they cannot be derived from the rate of return estimates without the aid of a substantial body of auxiliary information about the firm in question.



Chapter 3 deals with the estimates that are made of a firm's aggregate capital expenditures during various budget periods. Chapter 3 shows how the aggregate estimates of spending (on which financial budgets are generally based) reflect preliminary judgments about the size and number of investment projects to be undertaken in the financial period, and, in turn, affect the size and number of projects actually presented for approval. The procedures by which budgets are set, therefore, have some importance in determining the level of expenditures. The most important contribution of Chapter 3 was the analysis of the circumstances in which budgets have been altered immediately before or during a budget period. This led naturally into Chapter 4, which considered the whole variety of factors leading firms to make or alter expenditure plans at short notice, and the costs to them of doing so. The topic is a vital one, and reference will be made to it at several points in Part Two of the study. The chapter counsels suspicion of any general measure of the flexibility of investment outlays, but does not itself contain an adequate empirical basis for detailed estimates of the flexibility of capital expenditures.

Having studied the way in which the investment process responds in the short run to various external and internal changes in conditions, we turned, in Chapter 5, to consider some of the more stable inter-firm differences in investment behaviour. Several types of policy were distinguished, and it was suggested that these policies were stable enough to be used to define a firm's investment policy at a particular point of time. Knowledge about these policies helps to assess the investment opportunities and intentions of firms for the purposes

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of analyzing stabilization policies. If longer term changes in the tax structure are being considered, it is these policies that are subject to change, and knowledge of the nature of the policies improves predictions of the final effects of new tax legislation. Chapter 5 suggests ways of dividing firms according to their behaviour, but the distinctions are not put to the test; as in Chapter 4 we are provided with a catalogue of factors rather than precise quantitative estimates of their importance.

How are we to use the analysis of Part One when we come to the chapters of Part Two? Our conclusion from Chapters 1 and 2 was that the subjective profit expectations which underlie investment plans differ from the (scanty) recorded ex ante rate of return calculations in a number of ways. In Chapters 3, 4, and 5 we specified a number of influences on spending, and gave many examples. But what is the use of knowing several of the factors which condition the investment programme as it develops if we have no good measure of the subjective expectations which are at the heart of the process? Further research is planned to specify an investment function which is detailed enough to embody specific monetary and tax policies, to include independent variables to represent profit expectations, and to give to risk and uncertainty the central roles they play in observed investment behaviour. For the time being, we must do the best we can on the basis of the information we have.

However crude the assessment procedures of Chapter 1, they do provide some measure of the rates of return expected from new investment.

If we select those assessment techniques which most fully take account of the factors we have seen to influence investment decisions, we may use them to gain some idea of the impact of various taxation measures. 1/ Such crude analysis, assuming given profit expectations and some sort of risk standardization for all estimates, must be interpreted very cautiously. At every possible stage we should look for independent evidence of the effects of particular tax policies. Direct evidence will help, not only to assess the effects of the policies in question, but to shed light on the investment decision process itself.

#### REFERENCES

- 1/ A somewhat similar approach has been adopted by Dale Jorgenson in "Capital Theory and Investment Behavior", A.E.R., Papers and Proceedings, Vol. LIII, May 1963, pp. 247-259. He goes somewhat further than we are able to do in producing quantitative estimates, as he assumes neo-classical investment behaviour and a Cobb-Douglas production function, and then uses time series of investment and capital stock to estimate the time form of lagged response. He is then able to estimate elasticities of investment with respect to changes in the rate of discount (which by his assumptions must be equal to the rate of interest) and the rate of corporate taxation. In order to estimate the parameters Jorgenson has to make many assumptions (about the uniformity of decision-making, production functions, and time lags) that are not consistent with our case study and interview data.



## PART TWO

### The Effects of Certain Taxation Measures on the Size and Timing of Capital Expenditures

The chapters which follow use a combination of interview and survey evidence to supplement example calculation of the effects of taxation on anticipated rate of return on investment. The chapters on the depreciation provisions (7), the sales incentive tax credit (10) and changes in the corporation income tax rate (13) deal with measures which have been used, or have been suggested for use, as tools of stabilization policy. These chapters are, therefore, concerned with the timing as well as the size of the effects of changes in the tax provisions. On the other hand, the chapters on research expenditures (8), resource development (9), corporate finance (11) and location decisions (12) are less concerned with the timing of investment than with the direction and magnitude of the effects of taxation, since the tax provisions discussed in these chapters have not been used, nor have they been widely recommended for use, as means of adjusting the level of aggregate demand. Their primary purpose is to affect the structure and allocation of investment, and their suitability should be assessed with reference to their effects on the allocation of resources and the resultant pattern of economic growth.

In this study the analysis is restricted to the effects of taxation measures on the firms' rate of return on investment. Since no estimates are made either of the total expenditure effects of the measures, or of the social opportunity cost of the resources transferred, the evidence

in this study is not sufficient to justify definite conclusions about the consistency of these particular measures with the over-all objectives of taxation policy.

Despite its somewhat limited scope, the evidence in these chapters should help to shed further light on the investment process, as well as to indicate to some extent the nature of the impact of various taxation measures.

## CHAPTER 7 — CHANGES IN DEPRECIATION PROVISIONS

Depreciation provisions govern the rate at which the cost of assets purchased by a corporation may be charged off against taxable income. Rules which define the types of assets which may be charged against income in the year of purchase are, in this sense, depreciation provisions, although no direct reference to them will be made in this chapter. This chapter will be concerned primarily with changes in the allowable rates of writing off capitalized assets, with special reference to changes which apply only for a specified period of time. The depreciation allowances to be studied are those which are specified in the Income Tax Act for the determination of a corporation's income subject to tax rather than those which are used in computing the net income figure which appears in a corporation's financial statements.

### THE EFFECTS OF DEPRECIATION PROVISIONS ON THE ANTICIPATED PROFITABILITY OF INVESTMENT

The effect of write-off provisions on the expected rate of return depends on the way in which the timing and size of tax payments enter the calculations. If a change in tax provisions is such as to affect the total amount as well as the timing of tax payments over the life of a project, then a method of project evaluation which takes any account of taxation will probably show some effects on profitability. If only the timing of payments is altered (this would include most forms of accelerated and deferred depreciation), then only an assessment method taking specific account of the time pattern of tax payments will indicate that the changes have profitability effects. Much of the

controversy about the effects of depreciation provisions on the profitability of investment hinges on the chosen measure of profitability. It is perhaps easiest to sidestep any discussion of the appropriateness of various measures of profitability, and to consider only what the "real" effects and the "indicated" effects on profitability may be.

### The "Real" Effects

The value (or cost) to the corporation of an acceleration (or deferment) of depreciation allowances depends on the firm's alternative uses for the funds. If the firm could invest surplus cash in high return assets which could otherwise not have been purchased, then the value of accelerated depreciation is considerable. If, on the other hand, a firm already has large cash balances which are lent out on the short term market, then the value (cost) of accelerated (deferred) depreciation may be adequately represented by the short term lending rate. Briefly, the value of marginal changes in depreciation allowances is the marginal value of internally generated funds. 1/ This will vary with the firm's ability to obtain external funds, the existing flow of internally generated funds, lending and borrowing rates of interest, the firm's portfolio of financial assets, and the marginal efficiency of investment. The present value of depreciation allowances is not dependent on the rate of return on investment in the specific projects to which the acceleration or deferment applies.

### The "Indicated" Effects

These will be examined in the light of the investment criteria described in Chapter 1 of the study.

(a) Seventeen of the largest 70 firms regularly use discounted



cash flow procedures to assess the rate of return on new investment. Virtually all these firms bring tax payments into their analysis. The effects of any given change in the time pattern of depreciation write-offs depend on the ratios of annual income and annual operating costs to the cost of the depreciable assets, the amount of required working capital and non-depreciable fixed assets, and the time pattern and duration of revenues. If the firm discounts using a required minimum return, then accelerated depreciation adds to the present value of the project's net earnings; if the project's own rate of return is used, acceleration raises the indicated rate of return.

The following pages contain a number of calculations of the hypothetical effects of certain depreciation provisions on the marginal efficiency of investment. The calculations show how the provisions might affect the rate of return calculations made by firms using discounted cash flow assessment procedures. Two cautions must be given. On the one hand, the apparent precision of the hypothetical calculations should not be taken to infer that firms using D.C.F. assessment techniques make similar calculations, nor that they consider changes of the kind examined to be of material importance. On the other hand, it must not be assumed that firms not using D.C.F. procedures are unaware of the relative importance of different depreciation provisions, nor that their investment decisions ignore the timing of depreciation allowances.

There follow illustrations of the effects of certain changes in capital cost allowances on discounted cash flow measures of the profitability of new investment, (i) if the firm uses a required minimum rate of return as a discount factor, and (ii) if the firm assesses the

profitability of projects by computing the rate of discount which makes the present value of revenues equal the present value of costs.

(i) Using a minimum acceptable rate of return as a discount factor. 2/

<u>Change in Depreciation Provision</u>	<u>Present Value of the Acceleration (+) or Deferment (-), Expressed as a Percentage of the Initial Cost of the Depreciable Assets</u>					
	If the target rate of return used for discounting is:					
	(a)	5%	(b)	10%	(c)	15%
Depreciation rate of 5% on the declining balance doubled to 10%: <u>3/</u>		+8.3%		+8.3%		+7.5%
Effect of Regulation 1108, 1961, on Class 3 assets, including most buildings (see pages 160-161 below). Depreciation rate of 5% raised to 10% for the first year only, thereafter reverting to 5% on the declining balance: <u>4/</u>		+1.2%		+1.5%		+1.6%
Effect of Regulation 1109, 1961, on Class 3 assets. (See pages 163-164 below.) Depreciation rate of 5% raised to 7½% for the first year only, thereafter reverting to 5% on the declining balance: <u>5/</u>		+0.6%		+0.7%		+0.8%
Effect on Class 3 assets of 1963 measures providing accelerated depreciation for new manufacturing or processing businesses in areas of slower growth (see page 174 below). Depreciation rate of 5% on the declining balance changed to 20% straight line: <u>6/</u>		+18.3%		+21.3%		+21.0%
Depreciation rate of 20% on the declining balance raised to 40%: <u>7/</u>		+4.4%		+6.7%		+7.8%
Effect of Regulation 1108, 1961 on Class 8 assets, including most machinery and equipment (see page 160 below). Depreciation rate of 20% on the declining balance raised to 40% for the first year, and 20% on the declining balance thereafter: <u>8/</u>		+1.9%		+3.0%		+3.7%

<u>Change in Depreciation Provision</u>	<u>Present Value of the Acceleration (+) or Deferment (-), Expressed as a Percentage of the Initial Cost of the Depreciable Assets</u>					
	If the target rate of return used for discounting is:					
	(a)	5%	(b)	10%	(c)	15%
Effect of Regulation 1109, 1961, on Class 8 assets (see page 163 below). Depreciation rate of 20% on the declining balance changed to 30% for the first year and 20% on the declining balance thereafter: <u>9/</u>		+1.0%		+1.5%		+1.9%
Effect of 1963 measures to provide accelerated depreciation for all Class 8 assets purchased by corporations with the necessary degree of Canadian ownership and control (see page 166 below). Depreciation rate of 20% on the declining balance changed to 50% straight line: <u>10/</u>		+6.5%		+10.1%		+12.0%
Depreciation rate of 20% on the declining balance raised to 100%: <u>11/</u>		+7.6%		+12.1%		+14.9%
Effect on Class 8 assets of the 1951 deferment, had the measure been anticipated by firms to be carried out as originally announced. Depreciation rate of 20% on the declining balance deferred for four years and then started on the same basis: <u>12/</u>		-7.1%		-10.6%		-12.2%

Changes in depreciation provisions in the reverse direction will have symmetrical effects; for example, if a 100% write-off in the year of purchase is changed to a 20% rate of depreciation on the declining balance, the present cost of the tax acceleration (depreciation deferment) is 12.1% of the cost of the assets, if 10% is the appropriate rate of discount.

(ii) Measuring profitability by using the project's own rate of return. Since it is not possible to specify the variety of types of

projects and potential rates of return, the effects of depreciation provisions cannot be set out in a comprehensive way. The significance of depreciation changes can, however, be demonstrated by indicating their effects on the rates of return of sample projects. 13/

<u>Description of Project and of Change in Tax Provisions</u>	<u>D.C.F. Rate of Return before Change in Depre- ciation Provisions</u>	<u>D.C.F. Rate of Return after Depreciation Change</u>
Depreciation rate of 5% declining balance doubled to 10% declining balance on a building lasting 25 years and producing equal annual pre-tax and pre-depreciation revenues equal to 15% of the building's initial cost:	7.9%	9.0%
Effect on Class 3 assets (including most buildings) of Regulation 1108, 1961: same asset as above; depreciation doubled to 10% for first year only, reverting thereafter to 5% on the declining balance:	7.9%	8.05%
Effect on Class 3 assets of Regulation 1109, 1961: same asset as above; depreciation increased to 7½% for one year only, reverting thereafter to 5% on the declining balance:	7.9%	7.97%
Effect on Class 3 assets of 1963 measures applicable in designated areas of slower growth: same asset as above; depreciation rate changed from 5% declining balance to 20% straight line:	7.9%	11.0%
Depreciation rate of 20% declining balance doubled to 40% declining balance on a machine expected to last 7 years and to produce an annual pre-tax and depreciation income equal to 25% of the initial cost of the machine:	8.2%	10.2%



<u>Description of Project and of Change in Tax Provisions</u>	<u>D.C.F. Rate of Return before Change in Depre- ciation Provisions</u>	<u>D.C.F. Rate of Return after Depreciation Change</u>
Effect on Class 8 assets (inc- luding most machinery and equip- ment) of Regulation 1108, 1961: same asset and gross earnings; depreciation of 20% declining balance raised to 40% for one year only, thereafter 20% on the declining balance:	8.2%	9.1%
Effect on Class 8 assets of Regu- lation 1109, 1961: same asset and gross earnings; depreciation of 20% declining balance raised to 30% for one year only, thereafter 20% of the declining balance:	8.2%	8.6%
Effect on Class 8 assets of 1963 acceleration available to all cor- porations with the necessary degree of Canadian ownership and control: same asset and gross earnings; de- preciation changed from 20% declining balance to 50% straight line:	8.2%	11.7%
Same asset and gross earnings; 100% depreciation allowed in the year of purchase:	8.2%	12.7%
Effect on Class 8 assets of 1963 measures: depreciation rate of 20% declining balance changed to 50% straight line on a machine ex- pected to last 4 years and to pro- duce an annual pre-tax and depre- ciation income equal to 50% of the initial cost of the machine:	15.0%	21.8%
Effect on Class 8 assets of 1951 deferment, the calculations being made on the assumption that the measure would be carried out as originally announced: depreciation rate of 20% on the declining balance changed to no depreciation for 4 years, followed by 20% on the dec- lining balance. The machine has an expected life of 7 years and annual pre-tax and depreciation earnings of 25% of initial cost:	8.2%	6.0%

These calculations all assume a corporate tax rate of 50%, no scrap value, level annual earnings, and enough current income available against which to write off any excess depreciation allowances in the year they are granted.

The proportionate change in the expected rates of return is less if the initial expenditure involves some outlays on non-depreciable assets, if the firm does not have enough income in the early years to utilize the full depreciation allowance, or if the project's own rate of return is very high.

(b) Effects on profitability where assessment procedures do not take account of the timing of tax payments. As indicated in Chapter 1, 17 firms of the largest 70 employ discounted cash flow procedures as their official method of assessing most projects. With the exception of the two firms regularly using a cash flow payback analysis, the remaining firms normally use investment criteria which would not automatically take account of changes in the allowable rate of depreciation. The effects of depreciation changes on the results of cash flow payback analysis depend on whether the asset is or is not substantially written off for tax purposes by the time the payback is achieved, since this method does not differentiate between changes in the timing of tax payments within the payback period. For example, if a fast write-off provision is exchanged for one somewhat faster, a long payback period will not become much shorter, although shorter periods may be significantly affected. If a machine which has capital cost allowances of 20% on the declining balance has level annual gross earnings and a cash flow payback period of four years, a change to 40% capital cost allowance on the declining balance will shorten the period to  $3 \frac{1}{3}$  years, while 33  $\frac{1}{3}$ % (or any

higher rate) straight-line depreciation will reduce the cash flow payback period to 3 years.

- \* One firm was contemplating the construction of a plant whose cash flow payback under the usual 5% and 20% depreciation rates (Class 3 and Class 8 assets respectively) was  $8\frac{1}{2}$  years. Under the double depreciation introduced in 1961 the payback period decreased to 8 years, an improvement not thought great enough to make the project worthwhile.

Fifty-one firms of the group of 70 do not regularly employ rate of return calculations which show the effects of the timing of capital cost allowances on the value of investment projects. This does not imply that changes in depreciation provisions are not thought important, but it does at least indicate that such changes as have occurred have not been frequent enough or large enough to lead to the adopting of regular procedures which measure their importance. Among the firms using gross income or statement net income as a measure of profitability, the comment was frequently made that depreciation provisions do not affect profitability, since they alter the timing rather than the size of tax payments.

- \* "I'd just as soon that they stop fooling around with these gimmicks—after all, you still only get the value of the asset in depreciation allowances." The official suggested that the accelerated depreciation would not be taken into account when new projects were being evaluated for presentation to the board of directors.

Many firms, however, do consider the change in cash flow to represent a change in profitability, and may take account of changes in depreciation provisions by finding the present value of the change and then subtracting it from (or adding it to) the cost of the asset when computing the rate of return.

- \* One firm calculated the effect of the accelerated depreciation by discounting the comparable tax payments at the company's bank borrowing rate. The present value of the 1963 tax deferments is equal to a 16% reduction in the capital cost of a Class 8 asset.

The effects of particular depreciation changes, and the interview and survey evidence reflecting management opinions about the importance of depreciation provisions, will be studied separately for each of the recent major changes. The hypothetical effects of possible future changes in provisions can to a certain extent be estimated on the basis of the reported effects of past changes, the effects on indicated rates of return, and the earlier discussion on the flexibility and nature of marginal investment projects.

#### THE EFFECTS OF CERTAIN CHANGES IN DEPRECIATION PROVISIONS SINCE 1950

Since 1949 the declining balance method of depreciation has been in standard use for taxation purposes. Some of the more important classes of assets, and the rates which have been in general use, are as follows:

	<u>Maximum rate</u>
Class 2    Oil and gas pipelines, electrical generating equipment	6%
Class 3    Buildings (except frame buildings, for which the rate is 10%)	5%
Class 8    Machinery and unclassified assets	20%
Class 10   Motor vehicles, mining and logging equipment, oil and gas well equipment	30%

#### 1951 Deferment

On the basis of the 1951 budget provisions, certain classes of capital expenditures, after April 1951, were not to be eligible for any



depreciation until four years had passed. By late 1951 there was some easing of inflationary pressure and additional exemptions were granted; by the end of 1952 all capital expenditures were again subject to depreciation allowances. The survey conducted in 1963 for the Taxation Commission did not ask about the effects of these provisions, and executives interviewed in 1963 were often surprised to learn that depreciation had been deferred in postwar times, and were in no cases prepared to provide reliable evidence about the effects. The reliability of the available data depends on the nature of the definition of the classes of assets made subject to deferred depreciation. If the asset class definitions were not altered by firms to any significant extent, the evidence from investment intentions indicates a 22% decline from 1951 to 1952 in the volume of investment not eligible for depreciation allowances compared to a 27% increase in the volume of investment made on the basis of certificate of eligibility for depreciation. Since there is little that can be done to interpret these changes without more detailed knowledge of the basis of classification of expenditures, the analysis will not be carried further here. 14/

1961 Accelerated Depreciation for the Production of Goods New to  
Canada or New to a Surplus Manpower Area (Regulation 1108)

This incentive measure, which became operative on January 1, 1961, provided for depreciation at double the usual rates in the year of purchase, with the normal rate being applicable in subsequent years. The provision was in force until January 1, 1964, and applied to all depreciable assets required to produce goods new to Canada or to one of the specified surplus manpower areas. The effects of the provision on the discounted cash flow profitability of buildings (the usual depreciation

rate was 5%) and equipment (the usual depreciation rate was 20%) are outlined in the earlier pages of this section. The interview comments relating to the effects of depreciation incentives in general will be considered in the paragraphs dealing with the 1963 depreciation changes.

A mail questionnaire was sent out on behalf of the Taxation Commission in the spring of 1963 to most of the large public and private taxable corporations and to a sample of smaller public corporations (the coverage of the survey is explained in Appendix I). The responses to the question dealing with the 1961 depreciation changes for new products and surplus manpower areas (regulation 1108) are summarized in Table I on page 162.

Only one of the 115 firms answering the questionnaire (these firms made among them more than 50% of the 1961 capital expenditures by non-government corporations) had obtained any tax deferment under Regulation 1108 by the end of the 1962 fiscal year. The firm stated that the deferment, which was equal to .2% of 1961 taxable income, did not influence the decision to manufacture the new products in question. The questionnaire included a request for reasons why corporations did not change their activities to take advantage of the provision, and for comments on the objectives and adequacy of the provision. About 60% of the questionnaire responders made some sort of comment:

Seventeen firms, mainly in the natural resource and service industries, stated that the provision was not applicable.

Two firms suggested that it was too soon to identify the impact of the measures.

Four firms suggested that the tax deferment would not affect

## CHAPTER 7

TABLE I

## ACCELERATED DEPRECIATION FOR PRODUCTION OF PRODUCTS NEW TO CANADA OR NEW TO A SURPLUS MANPOWER AREA - REGULATION 1108

Number of companies reporting: 115  
 Companies to which regulation 1108 does not apply: 40  
 Companies with tax deferment: 1  
 Companies with no tax deferment: 74

## Summary of Questionnaire Responses

## Total Tax Deferment up to the End of 1962 Fiscal Year, by Size and Industry Groups

By Size:	Total	Companies with tax Deferment	Companies with no tax Deferment	Incentive not Applicable	Amount of Deferment	Percentage of deferment to taxable income
1. Large companies (with assets over 90 million dollars)	51	1	35	15	82,000	.2
2. Medium size companies (with assets between 25-90 million dollars)	38	-	24	14	-	-
3. Small companies (with assets less than 25 million dollars)	26	-	15	11	-	-
TOTAL	115	1	74	40	82,000	.2

## By Industry:

1. Mining and Quarrying	11	1	7	3	82,000	.2
3. Pulp and Paper	12	-	11	1	-	-
4. Primary Metal Manufacturing (steel and aluminium)	8	-	8	-	-	-
5. Petroleum, Oil & Gas Wells & Products	12	-	8	4	-	-
6. Other Manufacturing	45	-	33	12	-	-
7. Transport, Communication, Utilities	21	-	6	15	-	-
8. Trade	6	-	1	5	-	-
TOTAL	115	1	74	40	82,000	.2

Q: Was the deferment (if any) the result of a planned change in the activities of the firm designed to take advantage of the provision?

A: The only company who did report a tax deferment answered "no" to this question and, at the same time, gave the reason that the deferment has little effect.

(See Appendix I for an analysis of sampling procedures and response rates for the questionnaire. Appendix I includes a copy of the questionnaire.)

profitability. The measure "provides merely a change in the year taxes are paid". None of these firms use discounted cash flow investment criteria.

Twenty-two firms commented to the effect that the measure did not provide sufficient incentive. Of these 22, five suggested that firms be permitted to choose their own write-off period, eight recommended an investment credit or depreciation in excess of cost, and six suggested a lowering of tax rates or tax holidays to provide incentive. Three firms suggested that taxes were usually not important to their locational decisions—"It would seem to be a fundamental fact that a company should locate its manufacturing plant for sound business reasons rather than minor tax inducements"—and one firm stated that staff and facilities were not available either to consider the measures or to take advantage of them.

#### 1961 Accelerated Depreciation for Re-equipment and Modernization

This measure (regulation 1109) became operative on June 21, 1961, and provided for a 50% increase in the first year rate of depreciation. In years subsequent to the first, the depreciation is at the usual declining balance rates on the undepreciated cost. The special allowance was available on all classes of depreciable assets and applied to the amount by which the year's expenditures exceeded those of the previous year or the average of the three preceding years' outlays. The measure applied to all assets purchased before April 1, 1964.

The effects of this measure on discounted cash flow profitability assessments are illustrated in the earlier pages of this section, and



can be seen to be even less than those of regulation 1108. On new Class 8 machinery, the measure would provide, for all outlays above those of the base period, 30% (instead of 20%) capital cost allowance in the year of purchase, the remaining depreciation being taken at the regular 20% rate. For a hypothetical machinery purchase the discounted cash flow return would change from 8.2% to 8.5% on the strength of the acceleration.

Respondents to the Taxation Commission's questionnaire were asked the same questions as they were about the new products incentive, and the responses were quite similar. The main difference was that reported tax deferments were far more common: 43 out of the 115 respondent firms reported some deferment up to the end of the 1962 fiscal year, comprising 27 of the 51 large companies, 14 of the 38 companies with assets between 25 million and 90 million, and 2 of the 26 smaller companies. For the companies reporting deferments, the average (mean) size of the total deferment up to the end of the 1962 fiscal year was 330,000 dollars for the large companies, 83,000 for the medium-sized, and 25,000 for the smaller companies. Table II on page 165 summarizes the questionnaire responses dealing with regulation 1109.

None of the companies stated that the deferment was a result of a change in the activities of the firm planned to take advantage of the provision, although one respondent commented that "the benefit of such deferment of taxes represented an important factor in arriving at the decision to locate new facilities in Canada" (rather than in the U.S.). Whether or not the measure was decisive in this case could not be determined, since the firm's Canadian officials, with one exception, were not involved in the final location decision.

## CHAPTER 7

## TABLE II

## ACCELERATED DEPRECIATION FOR RE-EQUIPMENT AND MODERNIZATION - REGULATION 1109

## Summary of Questionnaire Responses

Number of companies reporting: 115  
 Companies to which regulation 1109 does not apply: 21  
 Companies with tax deferral: 43  
 Companies with no tax deferral: 51

## Total Tax Deferral up to the End of 1962 Fiscal Year, by Size and Industry Groups

By Size:	Total	Companies with Tax Deferral	Companies with no Tax Deferral	Incentive not Applicable	Amount of Deferral	Percentage of Deferral to Taxable Income
1. Large companies (with assets over 90 million dollars)	51	27	19	5	8,932,722	1.64
2. Medium size companies (with assets between 25-90 million dollars)	38	14	16	8	1,244,820	2.07
3. Small companies (with assets less than 25 million dollars)	26	2	16	8	53,500	3.31
TOTAL:	115	43	51	21	10,231,042	1.68
By Industry:						
1. Mining and Quarrying	11	4	6	1	778,432	1.95
3. Pulp and Paper	12	10	2	-	1,567,593	1.33
4. Primary Metal Manufacturing (steel and aluminium)	8	3	5	-	3,863,000	5.34
5. Petroleum, Oil & Gas Wells & Products	12	3	6	3	1,323,050	1.51
6. Other Manufacturing	45	14	24	7	1,334,851	5.54
7. Transport, Communication, Utilities	21	8	4	9	1,264,728	3.35
8. Trade	6	1	4	1	99,388	2.49
TOTAL:	115	43	51	21	10,231,042	1.68

Question 3: Was the deferral (if any) the result of a planned change in the activities of the firm designed to take advantage of the provision?

Answer to Question 3: One company said it was important in deciding to locate particular activities in Canada; another said that the saving was "in part" the result of a planned change; the 41 other companies said it was not the result of a planned change.

(See Appendix I for an analysis of sampling procedures and response rates for the questionnaire. Appendix I includes a copy of the questionnaire.)

About 60% of the firms responding to the questionnaire made some sort of comment on the provision and its effects. Twenty firms stated that the measure was inapplicable to their decisions, either because they were not in a tax-paying position, because such measures were not important determinants of their expenditures, or for unstated reasons. A further 13 firms commented that the restriction of benefits to expenditures greater than those in a (restrictively defined) base period reduced its effectiveness. Thirty-eight firms, in addition to those listed above, said that the measure did not provide a large enough incentive to affect their decisions. Of these 38, five commented that the measure was "just a tax deferment", eight recommended much larger capital cost allowances, possibly at the discretion of the companies themselves, four suggested an additional investment credit or capital cost allowance in excess of 100%, and six suggested an over-all reduction in corporation tax rates. 15/

1963 Accelerated Depreciation for Expenditures on Class 8 Assets by  
Manufacturing and Processing Enterprises

The measure permits Class 8 assets (chiefly machinery and equipment), purchased in the two years commencing June 14, 1963, to be depreciated at a 50% straight-line rate. The Budget Address of April 26, 1965, announced that the measure would be extended to cover machinery and equipment acquired up to the end of December 1966. The effects of the 1965 changes on the timing of investment are uncertain. Presumably there will be some slackening of the efforts which were being made to complete projects before the 1965 deadline, especially if firms have come to expect annual extensions of the time period within which the accelerated depreciation will be available. If the measure is coming to be regarded

as a continuing feature of tax policy, it will cease to have as much impact on the timing of investment, but may be expected to increase expenditures on Class 8 assets as a fraction of total investment outlays. As originally announced in the June 13, 1963 Budget, the incentive was available only to corporations having a 25% beneficial Canadian ownership and a proportionate number of Canadian directors. 16/ The corporation had to establish its necessary degree of Canadian ownership and control for the sixty-day period preceding the end of the taxation year in which the assets were purchased. 17/ A supplementary budget statement on July 8, 1963, defined corporations as having the necessary degree of Canadian ownership and control if their shares are publicly listed on a Canadian stock exchange, with "not more than 75% of the voting stock ... owned by a non-resident shareholder or others associated with him", 18/ and at the same time required that "the status of the corporation ... be determined by the ownership of its shares in the sixty days immediately preceding its taxation year". [Emphasis added.] 19/

The effects of this provision on the discounted cash flow profitability of investment were set out on page 150 of this chapter. Its effects on investment intentions have not been fully assessed, primarily because the research for this study had to be completed before the measure had become law and before it had been thoroughly taken account of by corporations. The analysis which follows, therefore, need not be generally applicable; a more general analysis would be facilitated by information obtained after corporation budgets had been prepared for expenditures to be made during the calendar year 1964. The results of the tentative analysis based on interviews conducted during the summer of 1963 will be considered briefly under several headings.



COVERAGE OF THE PROVISION

The initial uncertainty about the number and nature of the firms to which the provision might apply served to provide some evidence on the speed of reaction to budget measures.

- \* In one large firm a memo was sent at the end of June to plant managers advising them that discounted cash flow returns from investments in Class 8 assets would increase by 4 to 9 percentage points, enclosing a table for easy calculation of the expected benefits, and recommending that appropriation requests be prepared in such a way as to take account of the acceleration. The supplementary budget of July 8 changed the period of ownership qualification from the 60 days before the end of the fiscal year to the 60 days before the beginning of the fiscal year; since this change apparently made the corporation ineligible, another memo was sent out advising officials to return once more to the preparation of appropriation requests on the basis of the 20% rate. Later in the summer of 1963, it appeared as if the firm would be able to rearrange its affairs so as to be eligible for the acceleration in 1963 and subsequent years, but there was no immediately apparent inclination to despatch another memo with instructions that the 50% rate be employed in assessing projects.

In a number of other firms there was some doubt whether the ownership qualifications would be met with the existing distribution of ownership; or if not, whether changes in the capital structure would be made so as to provide the required degree of Canadian ownership and control. In these firms no direct assessment had been made of the possible effects on expenditure were the company to qualify; the matter was considered to be in abeyance. Some senior operating officials were not even aware of the existence of the provision and of its possible applicability to the firm, since the financial officials were postponing any communication to the operating departments until the firm's status was more clearly established. The uncertainty about the applicability of the provision seemed not only to reduce the number of firms officially assessing its advantages, but also to restrict knowledge of its potential applicability to a very few people within the firms.

There were some additional doubts, particularly in the early summer of 1963, whether the incentive measure would become law, and in what form. Most officials interviewed in August or later assumed that the accelerated depreciation for Class 8 assets would become law, although they tended to differ in their views as to the length of time for which the incentive would eventually apply.

\* A senior accountant interviewed two months after the introduction of the June 13 budget noted that the company had as yet done little to survey the effects of the depreciation provisions on its spending programme. He said that the delay in assessment was largely due to the uncertain legal status of the provisions.

Some of the lags which subsequent research may reveal will be due to the influence of the above-mentioned types of uncertainty, although not enough research has been done to estimate either the lags or the likely net effects of the measure.

#### THE MEASURE AS AN INCENTIVE TO ACCELERATE THE CONSTRUCTION OF PLANNED PROJECTS

There was developed in the first half of this study a distinction between capital expenditure flexibility derived from changing the construction times of projects already on tap and that involving the cancelling of planned expenditure or the addition of new projects to an existing programme. When discussing the probable effects of the accelerated depreciation provisions with corporate officials the distinction was frequently illustrated. In general, the prospects of a modest acceleration were thought to be greater than those of new projects. This was apparently due to two factors. The most frequently expressed limitation to the short term increase in spending was the shortage of engineering and planning personnel; apparently it is less of a drain on

these scarce resources to expedite marginally an established programme than to supplement it with entirely new projects requiring complete engineering and design. Secondly, the most frequently mentioned potential advantage of the measure was that it provides benefits for a project completed before June 14, 1965, as compared to one constructed after that time. There was very little reference made to potential projects which under previous depreciation rules failed to promise a satisfactory return but became attractive when their cash flow was improved by the acceleration of depreciation.

Most of the operating and financial officials with whom the measure was discussed considered it a substantial incentive, although opinion differed widely on its advisability and the extent to which it would be likely to affect expenditures. One president, whose financial executives had calculated the benefit of the deferment (as the average short term interest obtainable on the deferred taxes) to be  $\frac{1}{2}$  of 1% of annual net profits, was less impressed:

- \* "The measure reminds me of the action of a department store which advertises a big sale and then cuts its prices by  $\frac{1}{2}$  of 1%. You have to make sales price cuts, or taxation incentives, dramatic if they are to have any effect at all."

In some other firms the high proportion of expenditures charged to expense or capitalized as buildings reduces the effects of a Class 8 incentive:

- \* A chief engineer broke down the cost estimates for an 8 million dollar project to show that only 600,000 dollars was for Class 8 assets, and thus that the accelerated depreciation provided a very weak incentive for speeding up the construction process.

The three following examples reveal the more usual opinion that efforts would be made to get planned expenditures completed before June 1965:



- \* "That item was put in the budget to speed up capital investment. Naturally, if we're going to take advantage of it, we'd better speed up. So this means the pressure is on to get the money spent on those projects that are going to yield a good return. On the other hand,... we have the sales tax increase on building products and machinery. This immediately throws all the analyses we've done in the past right out the window."
- \* "Although we wouldn't undertake a project because of the accelerated depreciation, we probably will order our equipment early to allow us to take whatever advantage is obtainable." The official went on to say that the accelerated depreciation would not be taken into account when new projects were being assessed for presentation to the board of directors.
- \* "We might be encouraged to speed up some of the things which we are planning to do anyway, but to my knowledge no such action or planning has yet [September 1963] been undertaken within the company."

In most cases the suggestions that projects might be expedited were followed by comments that there were considerable limitations on the company's freedom to adjust the timing of expenditures.

- \* Q: "Are you planning to accelerate your expenditures (because of the depreciation changes)?"  
A: "It's not possible to do that because you just can't get the work done. You can't get sites prepared, you can't get foundations in.... Whether there's a tax gimmick, or whether there isn't a tax gimmick, we're going to get that piece of equipment into operation as fast as [possible]...."

The reasons advanced to explain the difficulty of expediting construction included the higher costs of overtime engineering and construction work, long order times for equipment, and shortage of planners and supervisors. These limitations were considered by several officials to rule out the possibility of large new projects being undertaken on the basis of the incentive, since the construction time alone for new plant may be  $1\frac{1}{2}$  to 2 years or even more. When executives came to consider the likely acceleration effects of the provision, they usually regarded smaller items, and marginal accelerations of already planned large projects, as



being the basis of whatever changes were possible.

- \* One official noted that the two-year write-off would probably materially influence the pace of the modernization programme in a low return area of the business. He gave an opinion that the time limit was too short to give scope for the introduction of large new projects, while the pace of construction of large projects already underway was pretty rigidly determined by the agreed delivery dates for equipment. He noted that on occasion in the past the company had made special deals with affiliated firms in other countries so as to get equipment more quickly, but described the possibilities for this kind of adjustment as being quite slight.

Officials in one firm noted that the incentive for Class 8 assets only might lead to a substitution of assets in Class 8 for other types of asset:

- \* A senior executive stated that his company would be inclined to change the balance of its investment in favour of equipment and against buildings. Specifically, he said that if the company was going to build more processing capacity it was likely that it would make every effort to construct facilities not requiring buildings.

Asked to hazard guesses on the likely size of their increases in capital expenditures in the pre-June 1965 period, the officials interviewed made estimates ranging from 1% to 20% of a normal year's capital expenditure. Since the effects of the provision had not been fully assessed within the firms, and since the influence was bound to be intertwined with that of the 11% sales tax on building materials and machinery, and with the timing of the steps by which the 11% is to be reached, the guesses were presented, and should be treated, as representing only rough views of the flexibility of expenditure programmes.

#### THE MEASURE AS AN INDUCEMENT TO UNDERTAKE NEW PROJECTS

In the first half of the study, we pointed out the absence of projects promising slightly less than the target rate of return, and argued that this was due to a number of ascertainable institutional and psychological

factors, and was not a characteristic of the available investment opportunities. Thus it is not surprising that officials interviewed did not have at hand a list of new projects which under pre-existing depreciation rules were sub-marginal, but were being reconsidered in the light of the new measure. Although there were records of projects delayed or recently rejected, the reason for delay or rejection was seldom a marginally insufficient rate of return. The effects of incentive provisions on the rate of development of new projects cannot, therefore, be predicted simply on the basis of an examination of recently rejected or withheld projects. Basically, the increase in the flow of projects can never be accurately measured, since it is never possible, given the way in which ideas become capital expenditure proposals, to know what the number and nature of appropriations would have been in the absence of the special provision. The estimation of effects is easier in firms with formally established plans which are changed only on the basis of particular incentives or changes in circumstances; but even here the difficulties are considerable, and there is every reason to think that the reaction of such firms is not typical of that of all firms.

Much depends on the reaction of senior management to the incentive. If they think it has an important effect on profitability, whether or not they are enthusiastic about it in theory, they will encourage the generation of new ideas. On the basis of such enthusiasm, operating management makes considerable changes in the nature and number of project proposals which they will prepare or endorse.

- \* A vice-president, commenting on the likely effects of the 50% depreciation provision, noted that there are always in the heads of operating officials ideas for capital expenditures which they would like to present, and are awaiting propitious circumstances to do so. He

estimated that there are at any one time perhaps 50 or 60 items which are on the fringe of acceptability, requiring, under normal circumstances, only the passage of time or a change in business circumstances in order to be acceptable. If a depreciation incentive were subject to a time limit, the incentive's general positive influence on profitability would be limited on the one hand by the shortness of the available planning period, while on the other hand the urgency of completing projects before the cut-off date would tend to increase the volume of expenditures during the period.

In the case of new projects, as with the acceleration of already planned expenditures, the shortage of personnel was mentioned as a limiting factor. There was an implication also that projects inspired by an incentive with a deadline might receive attention denied to other projects.

- \* A plant manager noted that from time to time queuing for engineering talent was a factor affecting the timing of particular projects; he also noted that the rate of return or any other measure of a project's urgency affected greatly the strength of the demands which he was willing to make of the engineering department. This in turn would affect the lengths to which the engineering department was likely to go in expediting projects, whether by working their own men overtime or by using outside consultants.

It is hoped that the above paragraphs provide some view of the initial effects of the 1963 measure. A more precise analysis must wait the collection of information on a broader basis at a time when plans have been more clearly established and projects reviewed in the light of the provisions.

#### 1963 Accelerated Depreciation for New Manufacturing or Processing Businesses Located in Designated Areas of Slower Growth

These measures initially provided for 50% straight-line depreciation for Class 8 assets and 20% straight-line write-off for new manufacturing and processing enterprises coming into operation within two years after the enactment of the necessary legislation. 29/ The effects of these



changes in depreciation rates on indicated profitability are shown earlier in this chapter. Corporate reaction to the measures will be described in a later chapter, since the depreciation provisions were part of a larger package of incentives based primarily on a three-year tax exemption for new enterprises in the areas of slower growth.

### Depreciation Allowances and Expectations

The foregoing analysis has involved the assumption that depreciation changes are brought into profitability calculations at their face value. If this assumption is to be a likely one, there are required two additional assumptions: first, that all changes in capital cost allowances apply only to assets not yet purchased, and secondly, that incentives or disincentives which are brought in for specified time periods be kept in force for the duration of those time periods. If depreciation allowances are altered by authorities in such a way that the latter two assumptions are invalid, then some allowance for this must be made when assessing entrepreneurs' expectations. For example, the 1951 depreciation deferment was announced as a four-year deferment of depreciation on newly purchased assets of the specified types, and the profitability calculations made earlier in this chapter assumed that the four-year deferment was used as a basis for profitability calculations. All the assets purchased in 1951, however, were depreciable by the end of 1952; if this had been predictable in 1951, the effects of the deferment on anticipated profitability would have been far less than if the original measure were assumed to be definite in its application. If the depreciation deferment had been used again within a period of a few years, the basis for expectations would have included the knowledge that the previous deferment had been withdrawn, and the effects of these altered expectations



on decisions clearly could not have been predicted in advance. This is but an instance of the more general point that the effects of a tax measure on anticipated profitability depend not only on the length of period for which it is initially stated to be applicable, but also on businessmen's anticipations about the duration of the measure.

If the effects of depreciation allowances on the incentive to invest are being investigated, assumptions must therefore be made about the anticipated level of capital cost allowances likely to apply to the assets in question, as well as to the level and nature of the corporate income tax. A corporate income tax of 50% has been used in this chapter in assessing various measures, and a majority of large corporations have in recent years made their calculations on the basis of an assumed 50% (plus or minus 3%) rate. If past taxation policy had been less stable, or if future tax changes were to be substantial and frequent, estimates of expectations about both tax rates and depreciation allowances would be important parts of any estimates of the effects of capital cost allowance changes on the profitability or volume of new capital expenditures.

# REFERENCES

1/ In the period when the allowances are used to decrease income subject to tax. If the corporation does not have enough current income to fully use the depreciation allowances, their value will depend on the nature of the carry-forward provisions.

2/ Where  $D'_a$  is the usual declining balance depreciation rate,  $D'_b$  the new declining balance depreciation rate,  $D_{at}$  the usual depreciation allowance in year  $t$ , and  $D_{bt}$  the new depreciation allowance in year  $t$ , the calculation of the present value of the acceleration (or deferment) of depreciation is as follows:

$$P.V. = \sum_{t=1}^n (D_{bt} - D_{at}) (T') (1 + r)^{-t}$$

where  $r$  = target rate of return used for discounting

$T'$  = marginal income tax rate, assumed in these calculations to be 50%

$D'_{at} = D_{at}$  since the cost of the asset is assumed to be 1.

3/  $D_{at} = 1 - (.95)^t$ ;  $D_{bt} = 1 - (.90)^t$ .

4/  $D_{at} = 1 - (.95)^t$ ;  $D_{bt} = 1 - (.90)^t$  where  $t = 1$ ,  $1 - (.95)^t$  where  $t > 1$ .

5/  $D_{at} = 1 - (.95)^t$ ;  $D_{bt} = 1 - (.925)^t$  where  $t = 1$ ,  $1 - (.95)^t$  where  $t > 1$ .

6/  $D_{at} = 1 - (.95)^t$ ;  $D_{bt} = .20$  where  $1 < t < 5$ , 0 where  $t > 5$ .

7/  $D_{at} = 1 - (.80)^t$ ;  $D_{bt} = 1 - (.60)^t$ .

8/  $D_{at} = 1 - (.80)^t$ ;  $D_{bt} = 1 - (.60)^t$  where  $t = 1$ ,  $1 - (.80)^t$  where  $t > 1$ .

9/  $D_{at} = 1 - (.80)^t$ ;  $D_{bt} = 1 - (.70)^t$  where  $t = 1$ ,  $1 - (.80)^t$  where  $t > 1$ .

10/  $D_{at} = 1 - (.80)^t$ ;  $D_{bt} = .50$  for  $t = 1$  and  $t = 2$ , 0 for  $t > 2$ .

11/  $D_{at} = 1 - (.80)^t$ ;  $D_{bt} = 1$  for  $t = 1$ , 0 for  $t > 1$ .

12/  $D_{at} = 1 - (.80)^t$ ;  $D_{bt} = 0$  for  $t = 1, 2, 3$ , and 4,  $D_{bt} = 1 - (.80)^{t-4}$  for  $t > 4$ .

- 13/ These calculations employ the formulae and terminology presented in Table I of Chapter 1.

$$I_F = \sum_{t=1}^n (G_t - T_t) (1 + r)^{-t}$$

$$= \sum_{t=1}^n G_t (1 + r)^{-t} - \sum_{t=1}^n T_t (1 + r)^{-t}$$

$r$  is the rate of discount which makes the value of the terms on the right hand side of the equation equal to the initial cost of the asset ( $I_F$ ).

$T_t = (G_t - D_t)T'$  (where  $T'$  is the marginal income tax rate). The value of  $D_t$  depends on  $D'_t$ , the rate of depreciation allowed in year  $t$ . Since in these examples the initial cost of the asset is assumed to be 1,  $D'_t$  may be assumed equal to  $D_t$ . For the purposes of calculating  $D$ ,  $t$  may exceed  $n$ ; that is, the value imputed to depreciation allowances is independent of the size or timing of the revenues from the project.

- 14/ For a fuller account of 1951 deferment measures and their effects, see: Richard Goode, "Special Tax Measures to Restrain Investment", International Monetary Fund Staff Papers, Vol. V, No. 3, February 1957, pp. 434-448, especially pp. 446-447. Benjamin Higgins, "Government Measures to Regularize Private Investment in Other Countries than the United States", in N.B.E.R., Regularization of Business Investment, Princeton University Press, 1954, pp. 459-481, especially pp. 466-473. M.W. Sharp, "Deferred Depreciation—A Further Assessment", Canadian Tax Journal, Vol. I, No. 3, May-June 1953, pp. 277-286.
- 15/ Since there were no prescribed categories for the respondent's comments, it has been necessary to paraphrase many in order to make any measure of the frequency with which certain points were raised. Supplementary interview information suggests that the questionnaire comments should be treated with extreme care, and considered indicative only of some executive attitudes to incentive provisions.
- 16/ House of Commons Debates, Vol. 108, June 13, 1963, p. 1004.
- 17/ House of Commons Debates, Vol. 108, June 13, 1963, p. 1009.
- 18/ House of Commons Debates, Vol. 108, July 8, 1963, p. 1951.
- 19/ Loc.cit.
- 20/ House of Commons Debates, Vol. 108, June 13, 1963, p. 1009. The legislation was enacted December 5, 1963. The date by which a plant has to come into operation was later extended from December 1965, to April 1, 1967 by amendment to the Income Tax Regulations. (P.C. 1964-1339, dated August 27, 1964.)

CHAPTER 8—THE EFFECTS OF TAXATION ON RESEARCH AND  
DEVELOPMENT EXPENDITURES

The general determinants of research and development expenditures were briefly discussed in Chapter 5. It was seen that investment in research and development is, in the firms studied, never justified on the basis of a specific anticipated rate of return. Consequently, the benefits of specific tax incentives to undertake research cannot be usefully represented, as could the benefits of depreciation provisions, as affecting the anticipated profitability of sample projects. However difficult it is to identify the number and nature of normal investment projects which are "almost" or "just barely" attractive enough to be undertaken, the corresponding problem with respect to decisions to allocate funds for research is far less tractable. Since a relatively small number of firms in Canada have undertaken research on any scale, there are many firms that have not even considered to any extent the possible advantages and disadvantages of research activity. To estimate the response of such firms to hypothetical tax measures would be foolhardy. There is, however, a certain amount of evidence relating to changes in research activity which have already taken place since the introduction of the National Research Council (hereinafter N.R.C.) grants, the Defence Research Board (hereinafter D.R.B.) grants, and the additional tax deductions for scientific research introduced in 1962.

The National Research Council's Industrial Research Assistance Programme was announced in January 1962, and made its first payments in June of that year. The grants are intended to cover approximately half



the total costs of approved research projects; the basic pattern of the scheme is for the N.R.C. to pay the salaries and wages of the scientific and technical staff and for the firms to provide the facilities and supplies. Up to mid-1964, there had been 96 projects approved. Table I shows the distribution of projects among industries, the amounts spent to date, and the estimated cost of completing the projects already approved. 1/

The Defence Industrial Research Programme of the Defence Research Board made its first grant in June 1962, and by mid-1964 had allocated 26 million dollars on 89 separate projects, the expenditures on particular projects to be spread over as many as five years. The scheme is similar to that of the N.R.C. in that the intent is to cover half the costs of approved projects, and the procedure is for D.R.B. to pay the salaries while the firms provide the facilities and equipment. The industries subsidized by the D.R.B. are fewer in number and more defence-oriented than those supported by the N.R.C. programme, while the average size of grant is slightly larger. The announced goal of the D.R.B. programme is to improve both the quantity and quality of applied research in Canadian defence industry, while that of the N.R.C. is to promote the establishment of new industrial research facilities generally.

The most important difference between the N.R.C. and D.R.B. schemes is that a firm which hopes to get an N.R.C. grant must show that the grant will lead to a net increase in the company's research effort. The D.R.B. subsidizes particular projects which are likely to have short or long term research potential. The D.R.B. Research Committee estimates that perhaps half the personnel subsidized under their scheme are additional staff hired by the firms in order to undertake the approved projects. Under the N.R.C. programme, there is a general condition that the staff whose salaries are paid by N.R.C. should be directly hired for the project, or else new staff should be hired to

TABLE I

## NATIONAL RESEARCH COUNCIL - INDUSTRIAL RESEARCH ASSISTANCE PROGRAMME

## SUMMARY OF PROJECTS APPROVED MARCH 1962 TO AUGUST 1964

Industry	Number of Projects	Number of Firms	in \$'000 of dollars				(6) Average Duration of Projects	(7) Forward Support	(8) Total N.R.C. Support	(9) Firms' Share	(10) Total Cost
			(1) N.R.C. Support 1962/63	(2) Expended 1962/63	(3) N.R.C. Support 1963/64	(4) Expended 1963/64					
Food and Beverage	12	8	91	52	234	192	4.2	664	1,207	1,264	2,470
Rubber	2	1	49	25	140	81	5.5	880	1,200	908	2,108
Wood	3	2	-	-	63	26	4.3	208	346	454	800
Paper	6	4	45	33	74	66	3.1	67	250	388	638
Primary Metals	6	5	40	40	162	128	3.3	270	715	979	1,695
Machinery	11	4	98	55	158	116	4.2	376	731	915	1,646
Electrical Products	17	11	168	94	364	272	3.3	1,291	2,118	2,824	4,942
Non-Metallic Minerals	7	4	45	21	109	88	3.8	304	526	469	994
Petroleum & Coal Products	3	2	8	8	47	45	3.3	95	223	224	447
Chemicals & Chemical Products	24	16	272	188	640	509	3.9	2,044	3,554	3,873	7,427
Other	5	5	27	27	101	80	3.8	123	335	377	712
Totals	96	62	843	543	2,092	1,603	3.8	6,322	11,205	12,675	23,879

Columns (1) and (2) show the funds approved for grants during the specified years on projects approved. Columns (3) and (4) show the amounts that the firms were able to spend; the discrepancy reflects delays, mostly caused by difficulties in hiring staff. Column (7) shows the estimated N.R.C. outlays over the next five years on projects already approved. Column (8) is the sum of columns (1), (3), (5) and (7). Column (9) shows the estimated expenditures by firms on plant, equipment, and materials for the approved projects. Column (10) is the sum of columns (8) and (9).

fill the positions of the transferred personnel. Thus, it appears much easier to assess the impact of the N.R.C. scheme on the volume of research activity, as the grants are tied to increases in research activity. Of course, it is probable that some of the increases in research activity supported by the N.R.C. would have taken place anyway, although a review of all the approved projects suggests that a large number of them would not have taken place had the N.R.C. grant not been obtained. Although the financial support was obviously important to the firms, interviews with several corporate officials indicated that many firms regard the N.R.C. approval as reliable independent evidence that the project has a reasonable chance of producing commercially adaptable results. In Chapter 5, pp. 128-132, we emphasized the paucity of ex ante data on which firms may base estimates of the rate of return on research outlays. In these circumstances firms are usually willing to attach considerable importance to the opinion of disinterested outside experts. One senior executive pointed out that it was too much to expect that the firm's own research staff should have the proper degree of enthusiasm about their work and at the same time take an objective view of the research potential when recommending projects for management approval. Some firms regard the N.R.C. approval as providing an objective judgment of the project in question, and, as well, of the ability of the firms' staff to carry out successful research.

Several of the applications for the N.R.C. grants have stressed that the research proposed would be too big a gamble if the entire cost were to be met by the firm. For example:

- \* "A major effort into the field of...could not be justified because of the necessity of training staff and the uncertainty of developing a successful project in this field. Since...is at present a waste product, we could not justify extensive fundamental research on a routine basis."



A taxation incentive to research was introduced in the April 10th, 1962 budget, and became a part of the Income Tax Act in November of that year. 2/ As enacted, the section permits corporations to deduct all current and capital expenditures made in Canada on scientific research 3/ when computing income subject to tax, and, in addition, to deduct 50% of the excess of research expenditures made in the current year over those made during the base year. 4/ The additional deduction, according to the Act, is to apply for the taxation years 1962 to 1966 inclusive, for expenditures of the approved type. 5/

It is difficult to separate the effects of the N.R.C. and D.R.B. grants 6/ for the payment of the salaries of approved personnel from those of the tax incentives for research expenditures, since both types of scheme came into effective operation within a few months of each other. For firms in a tax-paying position whose marginal research expenditures are subject to the 50% additional deduction, the effects of the two types of scheme are quite similar. Either scheme viewed separately reduces by one half the after-tax cost of research activity (for firms with current taxable income), while projects supported by either N.R.C.-D.R.B. grants and also entitled to the 150% deduction from taxable income cost only one quarter as much as they would if neither type of incentive policy were in operation. If the taxation incentive to research is taken to include the immediate write-off of all capital expenditures, then the cost of that part of research which is supported by N.R.C. (or D.R.B.), and which is greater than the base year expenditure, is less than one quarter of what it would have been in the absence of special provisions. 7/



The Taxation Commission's mail questionnaire requested information (set out in Table II) on the 1962 tax savings of the 115 respondent firms under the section of the Income Tax Act allowing the 50% additional deduction. The number of firms with tax savings, and the causal influence attributed to the tax provision, indicate that the research incentive had substantially more effect than the other investment incentives dealt with in the questionnaire. Twenty-eight firms (including 37% of the respondent large firms, 25% of those with assets of 25-90 million dollars, and 4% of the sample of firms with assets below 25 million dollars) stated that they had tax savings in 1962. For those firms reporting tax savings, the amounts averaged 50,000 dollars for the largest firms and 35,000 for the firms with assets below 90 million dollars. Seven of the 28 firms reporting tax savings suggested that the saving was, at least in part, the result of a change designed to take advantage of the provision. These figures in themselves mean little, as the tax savings could be the result of a natural growth of research activity, or expansion to provide facilities for research staff sponsored by the N.R.C. 8/ In addition, of course, many of the effects of the provision did not make themselves evident as soon as 1962; in fact, there were several comments on the questionnaires to the effect that an expansion of research was being contemplated but had not resulted in increased expenditures by the end of 1962. The interview and questionnaire comments provide, perhaps, the best evidence of the causal significance of the tax incentive, although they do not provide any basis for a prediction of the total effects of the provision in any particular period.

## ADDITIONAL DEDUCTION FOR SCIENTIFIC RESEARCH - SECTION 72A (1962)

## Summary of Questionnaire Responses

Number of Companies Reporting: 115  
Companies to which Section 72A does not apply: 18

Companies with tax saving: 28  
Companies with no tax saving: 69

## Total Tax Saving for 1962 Fiscal Year, by Size and Industry Groups

By Size:	Total	Companies with Tax Saving	Companies with No Tax Saving	Incentive Not Applicable	Amount of Saving	% of Saving to Taxable Income
1. Large companies (with assets over 90 million dollars)	51	19	25	7	958,068	.47 2/
2. Medium size companies (with assets between 25-90 million dollars)	38	8	23 1/	7	366,850	2.54 3/
3. Small companies (with assets less than 25 million dollars)	26	1	21	4	1,927	6.7
TOTAL	115	28	69	18	\$1,326,845	.6
By Industry:						
1. Mining and Quarrying	11	4	6	1	127,818	.38
3. Pulp & Paper Mills	12	6	6	-	129,044	.18
4. Primary Metal Manufacturing	8	3	5	-	160,303	.42
5. Petroleum, Oil & Gas Wells & Products	12	1	8	3	125,000	-
6. Other Manufacturing	45	14	31	-	784,680	1.02
7. Transport, Communication, Utilities	21	-	12	9	-	-
8. Trade	6	-	1	5	-	-
TOTAL	115	28	69	18	\$1,326,845	.6
Question 3: Was the saving (if any) the result of a planned change in the activities of the firm designed to take advantage of the provision?	Answers to Question 3:	Total	Yes	No	No Answer	
	1. Large Companies	19	3	15	1	
	2. Medium size Companies	8	3	5	-	
	3. Small Companies	1	1	-	-	
	TOTAL:	28	7	20	1	

(See Appendix I for an analysis of sampling procedures and response rates for the questionnaire.)  
(A copy of the questionnaire is included as Exhibit B.)

- 1/ One company, which had a tax saving of 484 dollars, is included here because most of its research is carried out by an Association; therefore, this amount is not comparable to income subject to tax.
- 2/ Includes one company with saving but no income subject to tax.
- 3/ Includes two companies with tax saving but no income subject to tax.

Among the firms which did not obtain tax savings in 1962 were several that had made abnormally large capital and current expenditures on research facilities during the base year. Some of these adopted the view that a broader definition of the base period would have made the provision fairer and of greater importance. Others attacked the principle of a marginal incentive related to increases above any base expenditure, describing such a measure as discriminating against the firms which were already doing what the provision itself was intended to encourage. For example:

- \* "We disagree with the objective of encouraging new or backward companies to expand their research activities, while established companies already having an extensive research programme gain little benefit from the provisions of section 72A." (From the mail questionnaire.)
- \* One firm went somewhat further and objected to the singling out of one particular type of business expense for subsidization: "All companies must do their utmost to promote efficiency, remain competitive, and plan for the future; the additional allowance of 50% of the amount spent on scientific research is a gratuity to particular taxpayers if the cost of scientific research is part of their ordinary cost of planning for the future." (From the mail questionnaire.)
- \* A senior executive in another firm reacted in the same way to the N.R.C. and D.R.B. grants, although he accepted the 50% additional allowance as a fair and useful encouragement. He objected to the N.R.C. grants because they provided subsidies for research projects which were of direct benefit only to the firm performing the research. "There are some expenditures which we have an obligation to make ourselves, without relying on outside subsidies."

The above comments reflect opinions that research projects, at least in major instances, have no external economies, and thus that the appropriate scale of such expenditures will only be obtained if they are put on the same footing for taxation purposes as other business expenditures. There was a much more widespread expression, both in interviews and questionnaire comments, of the contrary point of view that the subsidization of research would be likely to lead to a more appropriate (higher) level of such expenditures.



- \* "We are in agreement with the remarks the Minister of Finance made when proposing this legislation, to the effect that this would provide a new and powerful incentive to corporate taxpayers who undertake increased industrial research in Canada. It is hoped that the concentration of activity in this field will produce end results of lasting benefit to Canada." (From the mail questionnaire.)

Of the firms which did not obtain tax savings, there were at least three distinct groups whose situations are interestingly different.

(a) Firms whose research is entirely done by a parent company in another country. The existence of a strong research department in an associated firm in another country is not in itself enough to prevent firms from conducting research in Canada, as a number of large subsidiaries have established research facilities in Canada. The allocation of research activity to some extent reflects the independence of the subsidiary, and also the extent to which its products and processes duplicate those of its parent company. It was also suggested by several firms doing no research in Canada that the economies of scale in research in their industry were so great that it would be uneconomic to locate a smaller research unit in Canada:

- \* "Particularly", commented one executive, "when these incentive measures are of such a transitory nature that they cannot be used as a basis for long-run locational decisions."
- \* Another firm reported: "The high cost of constructing research and development facilities in Canada would far outweigh the benefits to be received therefrom. We now receive the full benefit of all research done by our U.S. parent company at a very nominal cost." (From the mail questionnaire.)

Many subsidiaries have agreements with parent companies whereby the subsidiary makes some standard contribution to central research facilities plus payments for specific projects carried out for the benefit of the Canadian firm. There were opinions offered that this research could not



possibly be done at an equivalent cost, with or without the subsidies, in Canada, even if the necessary personnel could be obtained. In any event, the decision to centralize research and development outside Canada is one taken by the parent company rather than the Canadian management, and the transfer of facilities to Canada has in the few cases examined required the presentation of a strong request by the Canadian firm. In at least one case the success of the request was said to be due to the recent subsidies reducing by 75% the costs of certain research done in Canada.

For some companies with foreign parents the centralization of research activity in another country is just one consequence of the subsidiary nature of their operations. Such firms report that the Canadian market is thought too small to allow new products to be developed and introduced; the only products brought into Canada being those which have proven successful in the larger U.S. market.

(b) Firms whose technology is fairly freely traded internationally, or whose research is done by an international trade association of some type. In some cases there is little incentive for individual firms to undertake research. The possibility that tax incentives might encourage international trade associations to locate their research activity in Canada was beyond the scope of the research for this study.

(c) Firms whose technology is so stable that they do not consider that there are profitable uses for research facilities.

\* The fact that "the products manufactured by us do not undergo rapid technological change" was offered by one firm as a partial explanation of the fact that no research was carried out in Canada. (From the mail questionnaire.)

The firms which have expanded their research and development expenditures since the introduction of the N.R.C. - D.R.B. programmes and the 50% additional deduction have been, except for criticisms of the base period, enthusiastic about the incentives. Even though, for firms with a 50% marginal tax rate, the effects of the 50% additional deduction are equal to those of the 50% cost sharing by N.R.C. or D.R.B., the direct grants by N.R.C. and D.R.B. were often mentioned by officials as being the more important elements in their decision to expand their research activity. This greater influence may in part be due to the fact that the relevant marginal tax rate for most firms (for the purposes of the deduction) is less than 50%, and in part to the disguised nature of the subsidy element in additional deductions. For some reason incentives seem far greater when expressed in the form of direct grants than when phrased in terms of equivalent tax deductions. For example, one questionnaire respondent suggested:

\* "More should be done to keep highly trained technologists in Canada. Perhaps corporations should be allowed to double the charge against taxable income for the remuneration of such personnel in order to retain their services in Canada."

If the firms allowed to make such deductions had a marginal tax rate of 50%, the proposal would be equivalent to a grant covering 100% of the salaries of any technologists hired by corporations. Yet expressed in terms of a charge against income subject to tax, the extent of the subsidy appeared more modest.

Some firms have found that the incentives have influenced decisions to have some research done in Canada which was previously carried out in parent company laboratories in other countries. Three examples:

- \* "In the past the company has engaged in some research projects in Canada on a joint basis with our American parent company and the tax incentive has increased the desire to carry on more scientific research of this nature in Canada." (From the mail questionnaire.)
- \* Another firm reported: "While the special incentive was not the major consideration for increasing our outlay for research, it was a contributing factor in having a larger portion of such work performed in Canada." (From the mail questionnaire.)
- \* In another subsidiary firm the announcement of the N.R.C. grants and tax incentives induced a senior official to enquire amongst the other executives whether there were any research opportunities. The general reaction of the other officials was that if there were any attractive possibilities the parent company would already be following them up in the course of their research activities. He did not accept this view, and has since obtained approval of an N.R.C.-backed project to search for basic ways of improving the flow and quality of production.

Other foreign-controlled firms have emphasized the specific problems of a Canadian subsidiary as a reason for undertaking research in Canada:

- \* "Our [U.S.] parent company ... has been doing research and development in the area for over four years and at the present time the first trial installation is being tested prior to temporary service in a few months .... Our problem ... is to establish our own design .... Canadian and export market requirements are not exactly the same as those found by our ... [U.S.] factory. Our customers generally require smaller units .... Our parent company is fully occupied with their own needs and is not in a position to develop such special designs for us .... The [U.S.] personnel are prepared to give us valuable guidance from time to time, and to make available the knowledge they have developed thus far in this field."

Even in some industries where there is some internationally-controlled research, there have been instances where the special measures appear to have influenced the location of research. In one case, some Canadian firms have joined together to sponsor research under the N.R.C. scheme:

- \* "Several members [of the industry association] have large research organizations within their corporate structure. In addition, these and other members support [an international product research group] through a tonnage levy. The project proposed differs from both the member companies' disclosed research programmes and that of [the international group] in that emphasis is placed on the basic fundamental nature of the research, rather than on the applied aspects



of the work. Indeed this would appear to be the only condition under which it would be feasible to operate a research venture of this kind, involving as it does the co-operation of profit-making companies that are in a competitive market structure."

The effective limits to the rate of growth of research in individual firms are apparently set primarily by the availability of research staff, and also, in the initial stages, by the firm's unfamiliarity with the organization and methods of industrial research.

- \* One vice-president reported that it had taken years to build up a smooth-working research team in the United States, and that it would be very costly to cut their activities in order to make room for another new research establishment within the firm.

Some of the seven questionnaire responders indicating that they were planning to take advantage of the provisions in 1963 or later suggested that it takes a considerable time to obtain acceptance for a research programme, determine the direction of its effects, and to hire the necessary staff.

It can be seen from Table I (at the beginning of the chapter) that firms have not been able to spend the grants allocated by the N.R.C. as soon as the funds have been made available. In most cases the delays have been caused by difficulties in hiring scientific staff. In June 1964, there were still 54 vacancies out of the 260 positions created by the 89 N.R.C. projects approved up to that date. One example:

- \* In its search for staff to carry out research under an N.R.C. grant, another firm spent more than \$1,000 on advertisements alone. In general, the firm has done rather better in hiring, as four scientists have been repatriated from the United States in the past year. Although Canadian salaries are lower than those paid by U.S. firms, the research director said that it was possible to hire Canadians away from large U.S. firms, particularly if the firm was willing to give its scientists a proportion of their time to spend on basic research, and full freedom to publish their results.



Although no precise measures could be made, it would appear that there is a longer lag between decision and expenditure for the establishment of a substantial research programme than for the establishment of new plant facilities. A fairly common way of overcoming this lag has been the introduction of preliminary research activities on a very small scale, followed by a gradual growth as research opportunities come to light and research skills are developed and co-ordinated.

In summary, the N.R.C.—D.R.B. grants and the 50% additional deduction had, by September 1963, had substantial effects on the level and direction of industrial research activity. The incentives were still too recent for the resultant research activity to have added measurably to the opportunities for profitable production.

## REFERENCES

- 1/ This chapter relies extensively on information kindly provided by the Industrial Research Committee of the National Research Council, and also by the Defence Research Board of the Department of National Defence.
- 2/ Sections 72 and 72A, Income Tax Act, S.C. 1962-63, c. 8, enacted November 29th, 1962.
- 3/ The Budget address of April 26, 1965, proposed assistance under a new Act in the form of a grant or a credit against tax liability of 25% of defined scientific research expenditures for the 1967 and subsequent taxation years. For 1966 a business may elect to obtain the benefits either under the Income Tax Act or under the proposed legislation. Assuming a 50% tax rate (which is, of course, more than the federal share of the present corporation tax), the new grant is equivalent in size to the 50% additional deduction under the 1962 Act, except that it will be available to all firms, even if they do not have current taxable income. Since there is not likely to be a base year provision in the new Act, the direct grant system will provide more favourable treatment for research and development capital expenditures than did the 1962 provision. See House of Commons Debates, Vol. 110, April 26, 1965, p. 436.
- 4/ The base year is the last taxation year ending before April 11th, 1962.
- 5/ Order in Council P.C. 1963 - 338, published March 13, 1963, SOR/63-78, applicable to the 1962 and subsequent taxation years, defines scientific research as "a systematic investigation...in the field of science  
(a) to acquire new knowledge  
(b) to devise or develop new products or processes, or  
(c) to apply newly acquired knowledge in making improvements to existing products or processes...."  
including expenditures for the development and testing of prototypes of new products or processes, but not to include:  
(a) market research,  
(b) sales promotion,  
(c) quality control of products or materials or routing product testing,  
(d) research in social sciences,  
(e) prospecting, exploring or drilling for minerals, petroleum or natural gas, including geological, geophysical or related studies,  
(f) preparation of specifications...for commercial production.
- 6/ Despite certain minor differences, the N.R.C. and D.R.B. grants will be considered as being the same type of incentive, and to have equivalent effects.

- 7/ If, for example, it is assumed that the research facilities would otherwise be in Class 8, and would show an 8.2% discounted cash flow return on the basis of 7 years of return, the equivalent return on an N.R.C.-D.R.B. supported project, all of which could be written off at 150% in the first year, would be approximately 45%, assuming that the corporation had a marginal tax rate of 50% and possessed other income against which to write off the research and development expenditures.
- 8/ Or they might be due in part to a reclassification of research expenditures in the firms' accounts.

## CHAPTER 9—TAXATION AND RESOURCE DEVELOPMENT

This chapter deals primarily with the special tax treatment of the mining and petroleum industries.<sup>1/</sup> Although there are periodic changes in the tax regulations, the basic structure of taxation in these industries does not vary much, and has come to be regarded by many firms as a feature of tax policy. The effects of this structure, as compared to taxation on some alternative bases, will be assessed by means of hypothetical examples. But it is not clear what the appropriate comparison should be. Much depends on whether the development of these resources is done by firms using management and money that would otherwise be engaged in other industries, or in other countries. If product markets, management, and finance are international, rather than national in scope, the taxation rules relevant for comparison are those governing investment in the same industry in other countries. If, on the other hand, the pattern of Canadian taxation is considered to affect primarily the distribution of investment among industries in Canada, then the tax treatment of resource industries should be related to the treatment of other domestic investment. In any case, predictions of the effects of special tax treatment must consider special features of the firms involved, as well as the characteristics of product and factor markets. Since most of the investment in the petroleum industry is by firms with international ownership and operations, it might seem that the appropriate point of comparison should be the tax treatment of the oil industry in other countries. But the discovery and production of oil products in many countries has come to be a matter of national policy, so that firms which want to be international have to develop sources in each of these countries even if there



are substantial international variations in the cost of finding and developing reserves.

Canadian mining, on the other hand, has been carried out to a far larger extent by firms owned and financed in Canada, so that tax incentives may be thought of as affecting the share of Canadian investment that goes into mine development. Since most large mining firms invest in several countries, it would be a mistake to conclude from the relatively large proportion of Canadian ownership in the mining industry that the international flow of mining capital would not be much affected by international differences in the tax treatment of the industry.

In addition to the complexities introduced by the international aspects of investment in mines and oil, there are all the interprovincial differences in the regulations governing extraction rights and royalty payments. Provincial policy about mineral rights and resource development will affect not only the distribution of investment among the provinces, but also the total amount of investment in the industry.

Many of the more complex and interesting features of investment in resource development will be ignored in the following pages which compare tax policies on the basis of the simplest assumptions about investment opportunities.

#### TAX INCENTIVES FOR INVESTMENT IN THE PETROLEUM INDUSTRY

##### Tax Provisions

Under the present tax rules, oil, mining, and pipeline corporations can write off drilling and exploration costs and bonus payments as fast as they wish against any income, or carry them forward for an indefinite period until income is available. Prior to April 10th, 1962, only corporations

whose principal business was oil or gas could deduct drilling and exploration costs, and no one could deduct bonus payments.<sup>2/</sup> Both before and after 1962 there has been a depletion allowance for oil and gas operators, whereby they can deduct  $33\frac{1}{3}\%$  of net income from oil and gas operations when computing income subject to tax.<sup>3/</sup> Depletion can only be claimed on that income which remains after all available drilling and exploration expenses have been charged against earnings. Most gas and oil well field equipment is in Class 10, normally subject to capital cost allowances of 30%; pipe lines connecting the field with gas plants are either Class 8 or Class 2, at 20% or 6% respectively, while the plants themselves are mostly Class 8 assets, depreciable at 20%.

Effects of Special Tax Provisions on the Estimated  
Rate of Return on Investment

The effects of these special provisions on the prospective return from investment depend on the nature of the project and the circumstances of the investing company.

EFFECTS OF THE TAX MEASURES ON EXPLORATORY DRILLING

The unlimited carry-forward of drilling and exploration expenditures does not affect the prospective return on such expenditures explicitly, since there is in general no way of estimating in advance the discovery value of reserves as yet undiscovered, and firms do not, except in the most general terms, assess the prospective return on exploration expenditures. The expenditures usually enter profitability as factors affecting the amount of tax which will have to be paid on production, refining, and marketing income, and the date when a tax-paying status will be achieved.

If a corporation currently has a backlog of allowable drilling and exploration expenditures, tax payments on all income are deferred until these expenditures are written off against any income. The integrated oil

companies with net refining and marketing income are able to obtain their tax reductions sooner, and in addition to expose a larger total amount of production income to the depletion allowance. This latter advantage of integration is a consequence of the fact that depletion allowances may be obtained only on production income; by writing off drilling expenditures against refining and marketing income, the integrated firms with backlogs of drilling and exploration expenditures expose more production income to the depletion allowance. The effects which the backlog of drilling and exploration expenditures will have on investment decisions will depend on how the timing of tax payments is brought into project assessment. In the case of investment in refining and marketing, it is common for integrated firms to assume that taxes on income from incremental investment projects will not be payable until the year in which the company is expected to become taxable. This makes the discounted cash flow rate of return better than it would be for a firm currently paying taxes, by an amount which would vary with the number of years before a tax-paying position is likely to be reached. Incremental refining and marketing income, during the period when there is a backlog of drilling and exploration expenditures, may also have a depletion allowance imputed to it, at a rate equal to  $33 \frac{1}{3}\%$  (the usual depletion rate) times the proportion which production income is expected to bear to total income during the year in which the company is to become taxable.<sup>4/</sup> These effects exist only for an integrated company in the interim period when there is an unused backlog of drilling and exploration expenditures.

#### RATE OF RETURN EFFECTS OF THE TAX MEASURES ON INVESTMENT IN DEVELOPMENT WELLS

Producing companies may consider production wells separately, or they may consider the tax-paying position of the company as a whole. The simplest procedure, and a common one when estimating the net return on a prospective well, is to assume that development drilling expenditures are

charged only against the income of the particular well being drilled. In actuality, the tax paid with respect to successful wells is likely to be less than such a procedure would indicate, because the exploration and drilling expenditures on unsuccessful development wells will be charged against the income from the successful wells.

The cost of development wells comprises drilling expenditures, which can be charged off against any income, and tangible assets, which are depreciable at 30% on the declining balance. Thus, if development wells are considered independently of each other, the initial expenditures are likely to be fully written off for tax purposes by the time a tax-paying position is reached. The following examples<sup>5/</sup> show the rates of return on development wells and indicate the influence of the depletion allowance on wells of different lengths of life.

	D.C.F. Rate of Return under Existing Rules (including 33 1/3% Net Depletion Allowance)	D.C.F. Rate of Return with Alterna- tive Tax Policy 6/	D.C.F. Rate of Return with Alter- native Tax Policy 7/
		A	B
(1) An oil well has an expected life of 14 years, with years 1-5 having the major flow. The cash flow payback period is 3.4 years. (Depreciable investment 15%, intangible 85%.)	19%	16.5%	13%
(2) A gas well has an expected life of 25 years with level annual production. The cash flow payback period is 8.3 years. (Depreciable investment 35%, intangible 65%.)	13%	11.0%	9%
(3) An oil well has an expected life of 32 years, with production 40% below peak during final 20 years. Cash flow payback period is 3.5 years. (Depreciable investment 15%, intangible 85%.)	23%	20.0%	15%



For oil and gas development wells the cash flow payback period is very close in length to the tax deferment period, since almost all of the total investment is written off against income before the cumulative total of income equals the capital cost. For example, in none of the three sample wells described above is there more than 1% of the investment not written off by the time the income from the well becomes taxable.

The types of assessment procedures described above are in general use throughout the petroleum industry for the evaluation of production drilling possibilities. The existence of a fairly stable posted well-head price, allowable production rates (in Alberta), a fairly well-developed basis for the prediction of the likely recovery from development drilling, and a number of alternative drilling sites from which to choose, provide the requirements for the consistent application of investment rules. Inter-firm differences in the application of procedures arise in the treatment of uncertainty; some firms set differential standards depending on the certainty of their estimates, while in other firms there might be an informal allowance made for the possibility of dry holes. Whether formally or informally set, a discounted cash flow return of 15% is a common minimum standard for development wells in an established area. There is considerable bunching around this rate of return, with the mode for one firm varying from year to year within the range 15-20%. Obviously the number and dispersion of more profitable opportunities will depend on the success of each firm's exploration activities, and the terms on which they are able to obtain (or farm out) proven reserves. That the homogeneity of opportunities and assessment among firms is more apparent than real is indicated by the prevalence of farm-out agreements and partnership associations. Firms will often farm out a property for drilling if it is

not attractive enough to be a part of their own drilling programme, and the terms of the farm-out agreement are often so favourable to the non-drilling firm that they could only be acceptable to the drilling firm if the drillers have different (more optimistic) views of the potential yield from the well. There are of course other powerful motives for the formation of drilling partnerships.

### Effects of the Tax Provisions on the Level of Investment

The over-all effect on investment of the special tax provisions affecting the oil and gas industry is too complex to be analyzed in this short space. However, the interview evidence would seem to indicate that exploration expenditures, whether for continued exploration in an established area, or for a major shift of search activity to a new region or another country, are based on broad policy decisions about the potential world market for crude oil, the prospects for oil in competition with other fuels, and the investment and trade policies of the government. Only for the marginal exploration activity in established fields are rates of return calculable or important elements in exploration decisions. Production expenditures, on the other hand, are carried out on the basis of discounted cash flow or payback period profitability analysis. Since Alberta has a system which sets the allowable rate of production from proven wells at substantially below their capacity, changes in the profitability of production drilling might be expected to change the number of wells drilled in a period but not the amount of oil recovered in a given year. In other areas the level of production might be more elastic with respect to changes in the profitability of production drilling.

From the examples calculated earlier in this section it would appear that the immediate deductibility of intangible investment (as opposed to being allowed to claim the expense on a per unit of production basis) has

considerably more effect on the anticipated rate of return (particularly for high rates of return) than has the depletion allowance. Changes in the allowable rates of depreciation for depreciable assets would have effects similar to those described in Chapter 7 on depreciation provisions, modified to the extent that many expenditures are for other than depreciable assets. Since depreciable assets are typically a fairly minor fraction of total development expenditures, the importance of the depreciation rules is not as great as that of the depletion provision or of the right to write off intangible drilling expenditures whenever desired.

Variations in the size of the depletion allowance, the rate of depreciation, or the tax treatment of intangible development expenditures would also affect the degree of tax advantage offered by integration. The examples calculated in the earlier pages of the section ignore this point, as each project is considered as independent. It has been mentioned that integration offers tax advantages by allowing drilling and exploration costs to be written off against refining and marketing income, and by increasing the amount of production income subject to net depletion allowances. These advantages of integration vary with the size of the depletion allowances and the allowable rates of depreciation. In general, the advantage will be less the lower are the depletion allowances and the less generous are the write-off provisions for depreciable assets and intangible development costs. A measure of the present advantage may be given: one of the example wells on page 199 promises a 19% return under the present rules, when considered as a separate venture. If this well were owned by an integrated firm which could charge the intangible drilling expenditures directly against other income, the prospective return would be 20.5%. If there were no net depletion allowance, but if intangible development costs could still be used for immediate offset against other

income, the well would show a prospective discounted cash flow return of 16.5% if considered as a separate venture, or 18% if undertaken by a company with other current income subject to tax.<sup>8/</sup>

It is presumed that the special tax provisions relating to the petroleum industry have been intended as long term measures, so that the lags likely to follow any changes in such provisions have not been considered in any detail. Executives interviewed spoke of the difficulty of gathering a skilled exploration staff, and indicated that once the core staff had been built up the costs of maintaining it were considered almost as fixed costs. There is considerably more variability in the expenditures on actual drilling, whether of an exploratory or developmental nature. Thus it has occurred in some firms that the scale of a drilling programme has been altered sharply in response to a shortage of cash, a change in development policy, or some other influence. For the larger firms financing the drilling programme, a change in its size, within certain bounds, is not considered very expensive; for the firms owning the drilling equipment, fluctuations in the level of activity are considerably more costly.

#### TAX INCENTIVES FOR INVESTMENT IN THE MINING INDUSTRY

##### Characteristics of Investment in Mining, and of the Procedures Used in Evaluating Opportunities

There are certain parallels between the decision to develop a new mine and that to drill an oil well, although in general a mine development involves a larger and less predictable expenditure than an oil well. The prospects of a certain quantity of ore of a minimum grade being discovered



are probably more predictable than the chances of success of a single wildcat oil or gas well, but considerably less predictable than the results of development drilling for oil or gas. As a consequence, the procedures adopted in the assessment of mine development proposals tend to be more precise than those used in the establishment of an oil or gas exploration drilling programme but considerably less precise than those used in determining the size of a development drilling programme. The large mining companies generally use payback procedures in assessing new mining prospects, although two or three firms also employ discounted cash flow measures of profitability. Whatever the assessment techniques employed, mining executives were quick to point out the difficulties of estimating the profits from new mines. The future price of the metal or mineral and the characteristics of the ore body are most difficult to estimate, and virtually all the projects examined in detail showed substantial deviations of results from estimates.

- \* One planning official said that it was always necessary to demand a higher prospective return from ~~a mine~~ than would be acceptable on a realized basis, since almost all changes in costs and revenues were unfavourable. He illustrated his statement with a number of specific mine developments, pointing out, in each case, the unforeseen circumstances which caused the costs of extraction or refining to be higher than anticipated. In one case an ore body did have a higher grade of ore than had been predicted, but the moisture content of the ore was higher than anticipated, and the increase in extraction costs almost cancelled out the increase in the value of the ore. He suggested that it was only when the company is planning the second stage of a phased development, that they can be reasonably confident in their estimates of costs and revenues, and thus accept a prospective return which is only slightly above a satisfactory realized profit.
- \* Another official described the mine development decision as a multi-stage decision, each stage involving different standards of appraisal. At the primary stage, an exploration programme is established on the basis of general market outlook, current profitability, and the results of exploration activity by others. If exploratory geology and preliminary drilling show substantial indicated reserves, a second decision is made, on the basis of the indicated potential of the reserves, to make substantial further expenditures to prove the reserves. Depending on the relative size of these expenditures, the decision to prove the reserves involves a varying degree of commitment to actually mine the ore body. Finally, after the reserves have been proven, the decision

is made to proceed or not with the construction of extraction and concentrating facilities, and a tentative decision is also made about the appropriate rate of extraction. The three-year tax-free period for new mines counsels a high initial rate of extraction (and perhaps the use of open-pit mining to facilitate the high volume of production), but there is, nevertheless, a substantial element of choice in the setting of the scale of operation. By the time this final decision is made, the uncertainties about the quality and quantity of the ore have been substantially reduced (at considerable cost), and for most mines the market price of the ore remains as the major uncertain factor.

The effects of special tax provisions on the profitability of investment in new mine developments can most conveniently be considered at the last major decision stage, when the qualities of the ore body have been roughly ascertained and the scale of production chosen, so that estimates can be made of the likely time pattern of receipts and expenditures.

#### Tax Regulations Governing Investment in Mining

The existing tax provisions affecting mining differ from those covering the production of oil and gas chiefly in the addition of a three-year tax exempt period for new mines. Payments for claims, which are the mining equivalent to bonus payments in the oil industry, are non-depreciable capital outlays for the purchaser and are not taxable in the hands of the vendor. This differs from the treatment of bonus payments in the oil industry, which until 1962 were treated as non-depreciable capital expenditures by the buyer and were not taxable in the hands of the vendor. Now such payments are income for the vendor, while, for the buyer, they are expenses which can be carried forward until income is available against which they may be offset. Most mining machinery and equipment, like oil and gas well equipment, is in Class 10, subject to 30% capital cost allowances on a declining balance basis.

## Effects of Special Tax Provisions on the Estimated Return on Investment

The effect of some of these provisions on the profitability of a mining venture may be illustrated by the following example:<sup>9/</sup>

- \* A mine is expected to cost 10 million dollars to develop and to produce ore valued at 2.4 million dollars annually (net of current operating costs) before taxation for the first three years of operation, and 2 million for each of the following seven years, at which time the ore body is expected to be exhausted and the equipment without value. Assuming a 50% tax rate, 33 1/3% net depletion allowance, provincial mining taxes on the Quebec scale,<sup>10/</sup> a three-year tax-free period, capital cost allowances of 30% on the declining balance for 5 million of the initial cost, unrestricted write-off of the other 5 million dollars (pre-production expenses), and an average declining balance write-off rate of 30% for the development costs, the anticipated discounted cash flow rate of return is 15.7%.<sup>11/</sup> If there were no depletion allowance the return would be 15.2%; if there were a depletion allowance but no tax-free period the anticipated return would be 12.8%. If there were neither a tax-free period nor a depletion allowance, the anticipated return would be 10.5%. If there were no tax-free period, no depletion allowance, and an average capital cost allowance of 20% on the declining balance of the cost of the fixed assets (unrestricted write-off of pre-production expenses still being allowed), the anticipated return would be 10.0%. If there were no tax-free period, no depletion allowance, a capital cost allowance of 20% on the declining balance of the fixed assets, and if the pre-production expenses had to be written off on a unit-of-production basis over the life of the mine, the rate of return would be 9.0%.

## Effects of the Tax Provisions on the Level of Investment

The foregoing calculations slightly overstate the effects of the special provisions, as it would be expected that the timing and scale of extraction could be varied to make the best of whatever the current tax regulations were. In any event, the total effect of all these special provisions is significant; and corporate officials interviewed were quick to point out that the level of investment in mining would be markedly affected by changes in anticipated profitability of similar magnitude. Several examples were produced of marginal projects now under consideration, sub-marginal mines now temporarily shut down, and operating mines which



would be shut down if the net return were slightly lower. For many metals the world market is large enough for the Canadian supply not to have any marked effect on prices, so that given changes in the Canadian output would not produce price changes likely to limit the change in Canadian production. This general point cannot be amplified without consideration of the specific world mineral markets for which Canadian firms produce, since the nature of their price structure and the relative importance of the Canadian output vary so greatly from one product to the next. Although there is not space here, it can be seen that such an analysis would be necessary before an estimate could be made of the likely effects of tax changes on the scale of investment in the Canadian mining industry. However, the importance of the existing tax provisions is great enough to allow the general conclusion that the rate of mine development in the longer term is quite dependent on the nature of the special tax provisions in force.

In the short term, tax changes will only affect the investment decision in the way indicated by the example on page 206 above if they are thought to apply for the entire life of the project. If there are to be tax-induced short term fluctuations in mining investment they are more likely to be caused by measures which affect the profitability of investment in a specified time period, in comparison with the same investment made at some other time. The scope of short term adjustments has not been discussed in this chapter; nor did the interviews serve to provide much evidence.

There have been in the past decade a number of sharp changes in the market outlook for several metals and minerals, and capital expenditures in mine development have responded with a fairly short lag. The relevance of these reaction times to those which would be associated with changes in fiscal policy has not been clearly established.



CONCLUSION

Only a few of the more important federal tax provisions relating to investment in resource development have been discussed above. Forestry, fishing, hydro development, and pipeline construction have not been separately considered, as the federal Income Tax Act does not treat them very differently from other industries 12/ less closely associated with natural resources. Most of the special tax provisions in the mining and petroleum industries have not been subject to frequent change, and are assumed by decision-makers to provide a basis for fairly firm expectations about the tax treatment of future income from current investment. Reasoning from the anticipated profitability of some of the mines and oil and gas wells which have been developed in the past decade suggests that the scale of investment in these industries would be quite sensitive, in the longer term, to changes in tax treatment. This is more likely to be the case in mining than in the petroleum industry, since the rate of mine development depends more on world prices which are relatively insensitive to changes in the Canadian supply, while the petroleum industry has to this date been providing primarily for the domestic market.

## REFERENCES

- 1/ The economic effects of the tax treatment of the resource industries are discussed more fully in M. Bucovetsky's study, Taxation of Mineral Extraction, A staff study for the Royal Commission on Taxation, Ottawa, Queen's Printer, 1966.
- 2/ A summary of the 1962 changes and the previously existing regulations may be found in the Canadian Tax Foundation's Oil and Gas Production and Taxes, Canadian Tax Papers No. 33, 1963, Chapters III-V.
- 3/ This section will consider operators' depletion only. Non-operators' and shareholder depletion are described in Oil and Gas Production and Taxes, Canadian Tax Foundation, Canadian Tax Papers No. 33, 1963, Chapter V.
- 4/ This procedure is an approximation which would not be correct in any situation where the exact income and exploration backlog position in the first years of tax payments could be predicted accurately. But to make such accurate predictions a firm would have to be certain not only of future tax rates and regulations, but also of the size and timing of revenues of both approved and potential investment projects. In the absence of such certainty, the firm knows only that incremental refining and marketing income during the period when there is a backlog of drilling and exploration expenditures increases the expected value of depletion allowances in the future, but is unable to estimate the exact size of the increase. The procedure described in the text is one way of assessing the expected value of depletion benefits from incremental refining and marketing income; the uncertainty surrounding such estimates is one reason why integrated firms in this position do not take account of the effects of refining and marketing income on the present value of depletion allowances.
- 5/ These examples are from the files of a producing firm, and were chosen by the firm to represent the types of production drilling opportunities they have considered and accepted. The calculations are made according to the formulae demonstrated in Chapters 1 and 7.
- 6/ Alternative tax policy A differs from the existing regulations only in that there is no depletion allowance.
- 7/ Under alternative tax policy B, depreciable investment is written off at 30% on the declining balance, (as under the present rules), intangible investment is written off on a per-barrel basis over the life of the well (intangibles can be written off any time under the present rules), there is a 50% tax rate and no depletion allowance.
- 8/ A corporate income tax rate of 50%, and a net depletion allowance of  $33 \frac{1}{3}\%$ , where applicable, are assumed in these calculations.

- 9/ The cost and revenue estimates are drawn from a hypothetical example in E.K. Cork, Finance in the Mining Industry, a staff study prepared for the Royal Commission on Banking and Finance, Ottawa, The Queen's Printer, 1962, page 75.
- 10/ Averaging 70,000 dollars annually over the life of the mine.
- 11/ These calculations treat the mine as a separate enterprise. The rate of return would be higher if the mine was developed by a firm with other income against which to write off the capital cost allowances and pre-production expenses. The advantages accruing to the large mining firm with mineral and non-mineral income are in this respect similar to those of the integrated oil firms. Expenditures may be more quickly charged against income, and the total depletable income may be greater for the integrated firms.
- 12/ An exception to this is the 1962 Income Tax Act amendment allowing a federal tax credit equal to  $2/3$  of provincial logging taxes up to a maximum credit of  $2/3$  of a 10% provincial tax on "income from logging operations".

## CHAPTER 10 — THE SALES INCENTIVE TAX CREDIT

The production incentive tax credit of 1962 was introduced in the April 1962 budget, became law in December 1962, and was withdrawn as of the end of 1963. 1/ The sales incentive, as the measure is more generally known, provided for a tax credit of 50% of the federal income tax otherwise payable on the first 50,000 dollars net income attributable to an increase of sales revenue above that of a base period. For increases in taxable income beyond 50,000 dollars, the tax credit was 25% of the income attributable to increased sales. That is:

$$\begin{array}{rcll} \text{Amount of taxable} & & \text{Average of value of sales} & \\ \text{income eligible} & & \text{for the 3 preceding years} & \\ \text{for the tax credit} & = & \text{value of current sales - (but not to include any} & \text{taxable} \\ & & \text{years prior to 1961)} & \text{income} \\ & & \text{current sales} & \text{before tax} \\ & & & \text{credit} \end{array} \quad \times$$

Amount of tax credit = marginal tax rate x 50% x first 50,000 dollars of income eligible for tax credit + marginal tax rate x 25% x all remaining income eligible for tax credit.

The actual value of the credit (for corporations with taxable income greater than 25,000 dollars) was 20.5% (20% in Quebec) of the first 50,000 dollars of eligible income, and 10.25% (10% in Quebec) of all additional eligible income.

The measure is not an easy one to translate into return on investment terms, since a number of assumptions are required about the corporation's sales and profits. The most obvious fact to be noted is that the measure has no positive effect on the rate of return on investment in projects designed to reduce costs, rather than increase sales and output, unless



the corporation has otherwise established its eligibility for a tax credit. 2/ Expenditures which have no immediate effects on operating costs or revenues would be, if anything, discouraged by the incentive, since the depreciation allowances on these assets not producing an immediate return would serve to reduce the net profit base on which a sales credit would be calculated. Expenditures designed to increase sales and revenues would be the only ones subject to the full incentive effects of section 40A.

In order to compute the effects of the incentive on the potential rate of return on expansion expenditures, it is necessary to make some assumptions about the relationship between the project's relative contribution to sales revenues and net profit. Two extreme cases may be presented to illustrate the importance of such assumptions:

- \* Corporation A has in the base period sales of 200,000 dollars and pre-tax profits of 50,000 dollars. If the firm took on 100,000 dollars of new sales which contributed nothing to pre-tax profits there would nevertheless be a tax credit of  $\frac{300,000 - 200,000}{300,000} \times 50,000 \times \text{marginal tax rate}$ . If the marginal tax rate were 40%, 3/ the tax reduction would be 6,666 dollars, 6 2/3% of the incremental sales.
- \* Corporation B has in the base period just come into a taxable position, having only 25,000 dollars taxable income on sales of 1 million dollars. Suppose also that the firm took on 100,000 dollars of new business producing 10,000 dollars contribution to pre-tax profits. If the marginal tax rate were 40%, the tax credit would be  $\frac{1,100,000 - 1,000,000}{1,100,000} \times 35,000 \times 40\%$ , or 1270 dollars, 1.3% of the incremental sales.

These examples show the importance of assumptions about the pre-existing levels of profits and sales on the size of the tax credit obtained. In these two examples the expansion which added to taxable income received a smaller total tax credit than the expansion which had no pre-tax

profit at all. If profitability is measured in terms of rate of return on capital, it is clear that further assumptions about the capital/output ratio are crucial to calculations of the effects of the incentives on profitability:

- \* Corporation C has base year sales of 500,000 dollars and pre-tax profits of 100,000 dollars. The firm is contemplating making a new product in one of two ways. It is planned either to buy equipment costing 50,000 dollars and assemble the product from imported parts or to set up an entire plant costing 250,000 dollars to manufacture the product right from the raw material stage. Before considering the sales incentive, the two schemes appear equally profitable. The anticipated discounted cash flow return is 10% for both investments, and the anticipated pre-tax profits in the first year of operation are expected for either project to be 10% of the capital employed. In either case the expected increase in sales is 250,000 dollars. Assuming 40% marginal tax rate, the sales incentive for the larger plant would be 16,667 dollars 4/ and that for the smaller plant 14,000 dollars. 5/ Measured in terms of a crude annual return on capital employed, the incentive in the first year would be 28% on the smaller plant and 6.7% on the larger plant. At a 10% rate of discount the total present value of all years' tax credits (assuming total sales stable at 750,000 dollars after the opening of the new plant) for the two plants respectively would be 44.0% of the cost of the smaller plant and 10.4% 6/ of the cost of the larger plant.

The interesting result illustrated above is a consequence of any tax provision based on the volume or value of sales. In order to show the effects of the measure by simple discounted cash flow methods similar to those used in this study to illustrate the effects of capital cost allowances and other tax provisions, it is necessary to make simplifying assumptions. With these assumptions made, the effects of variable capital/sales and sales/profit ratios on the impact of the tax will be ignored. The calculations below assume that the ratio of net profit before tax and depreciation/related capital expenditures, and that of sales/net profit before taxes and depreciation are the same for the proposed expansion as they are on the corporation's existing business. 7/ They assume that the over-all corporate tax rate is 50% except for the

purposes of computing the sales incentive tax credit, when a 40% marginal rate is assumed. 8/

	<u>Rate of Return Before Tax Credit</u>	<u>D.C.F. Rate of Return Assuming that the 25% Tax Credit is Applicable to All the Incre- mental Earnings</u>	<u>D.C.F. Rate of Return Assuming that the 50% Tax Credit is Applicable to All the Incre- mental Earnings</u>
(1) A machine is expected to last 7 years and to produce annual pre-tax and depreciation revenues equal to 25% of the cost of the asset. The depreciation rate is 20% on the declining balance. The corporation does not expect to be eligible for any production incentive at the time the machine is worn out.	8.2%	9.4%	10.6%
(2) Same asset and gross earnings. The corporation expects to be eligible for production incentive tax credits (from other projects) at the end of the machine's life, and takes account of the "negative tax credit" arising when the sales revenues drop at the end of the machine's life.	8.2%	8.8%	9.4%
(3) A building is expected to last 25 years and to produce annual pre-tax and depreciation earnings equal to 15% of the original cost of the asset. The depreciation rate is 5% of the declining balance (the effects of a possible "negative tax credit" at the end of 25 years are small enough to be ignored).	7.9%	8.2%	8.5%

Entrepreneurs' expectations about the life of the provisions have important effects on indicated rates of return. If it is expected that the provision will only be in force for a limited period of time, then the calculations of example (1) above are appropriate. If the measure is expected to be in force for a number of years, then adjustments must be made to the rate of return calculations for projects which expand sales only for a limited period of time. Example (2) above shows the effects of the adjustments. If the measure is thought to be temporary, as was section 40A, 9/ there is a substantial incentive to make adjustments to an investment programme so as to maximize the immediate increase in current sales per dollar of capital expenditures. 10/

The Taxation Commission's mail questionnaire asked questions designed to assess the actual effects of section 40A on the taxes paid by respondent firms. Table I provides a summary of the responses that were given. Most noteworthy is the large amount of the sales incentive tax credit received by respondent firms, compared to the amounts received on account of the other incentive provisions, even though the sales incentive only applied to sales after March 1962. The total tax saving reported for 1962 was 4.7 million dollars. 11/ None of the firms obtaining tax credit under section 40A indicated that they had changed their plans to take advantage of the provision. 12/ Notable also is the high fraction of responders (30% of those expressing an opinion) who disagreed with the objective of the provision. 13/ The reasons given for objecting to the provision serve to indicate the complexity of the measure and the uncertainty of corporate officials about the nature of its application. Several firms stated that they try to maximize sales without incentives, and others that they were already producing at maximum capacity.



## CHAPTER 10

TABLE I

## SALES INCENTIVE - SECTION 40A

## Summary of Questionnaire Responses

Number of Companies Reporting:		Total Tax Savings up to the End of 1962 Fiscal Year, by Size and Industry Groups						
Companies to which section 40A does not apply:		Total	Companies with Tax Saving	Companies with No Tax Saving	Incentive not Applicable	Amount of Saving	% of Saving to Taxable Income	
Companies with Tax Savings:								
Companies with no Tax Savings:								
By Size:								
1. Large companies (with assets over 90 million dollars)	115	51	21	5	25	4,356,748	1.27	
2. Medium size companies (with assets between 25-90 million dollars)	45	38	13	15	10	255,971	.74	
3. Small companies (with assets less than 25 million dollars)	41	26	7	9	10	44,131	1.97	
TOTAL:		115	41	29	45	4,656,850	1.22	
By Industry:								
1. Mining and Quarrying	11	11	6	6	11	358,798	.49	
3. Pulp & Paper Mills	12	12	3	4	1	440,414	.64	
4. Primary Metal Manufacturing	8	8	3	4	9	503,340	.74	
5. Petroleum, Oil & Gas Wells & Products	12	12	3	15	3	3,318,965	1.69	
6. Other Manufacturing	45	45	27	1	18	35,333	.84	
7. Transport, Communication, Utilities	21	21	2	3	3	-	-	
8. Trade	6	6	-	3	3	-	-	
TOTAL:		115	41	29	45	4,656,850	1.22	

Question 3: Was the saving (if any) the result of a planned change in the activities of the firm designed to take advantage of the provision?

Answer to Question 3: Only one company answered "yes" to this question—a medium size company in the "Other Manufacturing" industry. The remaining 40 companies answered "no".

(See Appendix I for an analysis of sampling procedures and response rates for the questionnaire.)

A copy of the questionnaire is included as Exhibit B.)

There was little reference made to section 40A in the interviews conducted for the Taxation Commission during the summer of 1963. Those executives who did comment on the sales incentive said that it had had no effect on their planning during its brief life. There was no enthusiasm expressed for its revival. To reconcile the fairly substantial effects of the measure on the profitability of marginal sales expansion with the general corporate view of the measure's inefficacy, three facts may be noted.

- (1) There was even at the outset of the life of the provision some doubt as to whether the measure would become law, and, having become law, how long it would remain.
- (2) The effects of the incentive on the rate of return on new investment are difficult to assess, and cannot be measured without a considerable number of assumptions.
- (3) The incentive was not administered or publicized in such a way as to make corporations fully aware of its potential effects.

Several earlier chapters in this study have emphasized the importance of the circumstances surrounding the introduction of a tax measure to the effects which the measure subsequently has. The circumstances surrounding the introduction of section 40A were so complex, 14/ and its life so short, that it is difficult to make any quantitative assessments which would be a reliable guide either to the effects of section 40A or to the general influence of measures with equivalent effects on the marginal efficiency of investment.

## REFERENCES

- 1/ The provision is briefly outlined by W.C. Shakespeare in "Canadian Income Tax Amendments in 1962", Canadian Tax Journal, Vol. XI, January-February 1963, p. 19. The measure itself was section 40A of the Income Tax Act, enacted November 29, 1962.
  
- 2/ If other expenditures are made which make the corporation eligible for a tax credit, then cost reducing investments may increase the amount of tax credit obtained by increasing the net profit, and hence the amount of net profit which is "attributed" to increased sales. On the other hand, any cost-reduction expenditures for which the depreciation charges are greater in the first years than the cost savings will effectively reduce the net profit base on which the credit is calculated.
  
- 3/ Since the relevant marginal federal tax rate was 41% outside Quebec, and 40% in Quebec, these examples slightly understate the size of the tax credit for all provinces but Quebec.
  
- 4/ 
$$\frac{750 - 500}{750} \times 105,000 \text{ dollars} \times 40\%.$$
  
- 5/ 
$$\frac{750 - 500}{750} \times 125,000 \text{ dollars} \times 40\%$$
  
- 6/ The credits for individual years are 16,667, 8,333, and 5,555 dollars for the manufacturing and 14,000, 7,000, and 4,666 dollars for the assembly operation.
  
- 7/ Despite the obvious incentive provided by section 40A for the corporation to decrease the capital/sales ratio and the net profit/sales ratio on marginal investment projects.
  
- 8/ A 50% rate is used for the computation of the present value of capital cost allowances. This assumption causes the estimates of the benefits of the incentive to be overstated by an amount which rises with the fraction that the project's net income bears to the corporation's total net income during the year in question. The 40% rate used in computing the incentive tax credit is the marginal federal tax rate in Quebec for corporate income above 25,000 dollars, and an approximation to the 41% rate of federal tax in the other provinces.
  
- 2/ No detailed research was undertaken on the expectations of entrepreneurs about the length of time for which they thought section 40A would apply, but the time is not likely to have been long. The parliamentary opposition indicated even before section 40A was passed (House of Commons Debates, Vol. 107, November 15, 1962, pp. 1655-6) that they would repeal the measure if they were to form the next government.

- 10/ Except that under section 40A a corporation may be denied any tax credit if the firm is held to have included "in its net sales for the year an amount in respect of sales that can reasonably be regarded as having been made primarily for the purpose of increasing the amount [of tax] ... deductible ...."
- 11/ Compared to 1.3 million dollars for the research incentive, 10.2 million for regulation 1109 and 82,000 dollars for regulation 1108 (the latter two amounts being tax deferments rather than tax savings).
- 12/ Which is unsurprising in the light of the warning in section 40A that firms which do so change their sales may be denied the tax credit.
- 13/ Seventy per cent of responders expressing an opinion approved the objective of section 40A, compared to 96% for the research incentive, 88% for regulation 1109, and 85% for regulation 1108.
- 14/ For example, the lowering value of the Canadian dollar during early 1962 provided a number of opportunities for corporations to increase their sales both in Canada and abroad. Since section 40A was almost exactly contemporaneous with the drop in the exchange rate, statistical analysis of aggregate sales data would probably be misleading.



## CHAPTER 11 — TAXATION AND CORPORATE FINANCE

Corporate capital expenditures are financed by funds obtained from shareholders, lenders, and trade creditors. The extent to which the volume and timing of these expenditures depends on the terms upon which funds are available shall in this section be ignored. The concern here will be with the effects of certain tax provisions on the pattern of financing which is adopted to provide for a given expenditure programme. Taxation affects the pattern of corporate financing if the total amount of taxation on the transfer of funds to and from the provider to the corporation differs for the various means of obtaining finance. This section is not concerned with assessing the equality or inequality of the tax treatment of various means of financing; the analysis is intended only to show how the pattern of financing might differ if the tax treatment were different in certain respects. The chapter will consider the effects of the tax treatment of interest and dividends, and will deal with the recent measures affecting the financing of Canadian subsidiaries of foreign corporations.

### THE TREATMENT OF INTEREST AND DIVIDENDS UNDER THE CORPORATE INCOME TAX

#### Inter-corporate Transfers of Funds

The ways of transferring funds from one operating corporation (not a holding company) to another are basically not affected by the rate of corporate income tax. If the transfer is by long or short term borrowing, the interest payments are taxable in the hands of the recipient but are deductible from the taxable income of the borrowing corporation. If the transfer is by way of trade credit, interest on the net trade credit

extended is an implicit element of the sales price and thus is taxable in the hands of the lending corporation and a deductible expense of the borrowing corporation. The situation differs slightly for transfers of funds by the purchase of equity shares, as dividend payments for the use of the funds must be made out of the tax paid income of the "borrowing" corporation, but are not taxable as income in the hands of the lending corporation. The voting control, risk, and liquidity implications of these ways of transferring funds differ considerably—so much so, that firms often do not consider them to be alternatives. The legal complexities and costs of issuing share capital for short periods of time are usually thought to provide sufficient reason for making inter-corporate transfers of short and medium term funds by means of loans or trade credit.

#### The Financing of Canadian Subsidiaries by Canadian Parent Companies

In this study the financial relationships between Canadian parent and subsidiary corporations have been largely ignored, since subsidiaries owned more than 50% by another corporation have been considered as part of the parent corporation for the purpose of analysis. There are a number of ways in which the tax structure and administration affect the transfer of funds between parent and subsidiary, particularly in cases where both corporations had an independent existence before becoming associated with one another. Although the matters of designated surplus, associated corporations, and accumulated losses were frequently mentioned in interviews as the immediate causes of changes in financial structure, the material was not collected on a general enough basis for it to be usefully presented in this study.

## The Financing of Canadian Subsidiaries of Foreign Corporations

The effects of some tax measures on the pattern of financing of Canadian subsidiaries are considered later on in this chapter. Other matters are mentioned in Appendix III on the investment behaviour of subsidiaries.

### Transfers of Funds from Individuals or Financial Corporations to Non-financial Corporations

Interest on borrowed funds is paid by borrowing corporations out of pre-tax income; the recipients pay tax on the income at their marginal tax rate. Dividends must be paid out of tax-paid income, and are taxable in the hands of individual shareholders, subject to a dividend tax credit (for Canadian shareholders) equal to 20% of dividends paid. 1/ That is, the lender's return on securities subject to fixed interest payments is taxed only in his own hands, 2/ while the shareholder's return is taxed in the hands of the corporation and then again in his own hands to the extent that the income of the corporation is distributed. To put the matter too briefly, the lender's return is subject only to the personal income tax, 3/ while the (Canadian) shareholder's return is subject to the corporate income tax plus personal income tax on dividends, less a tax credit equal to 20% of dividends received. Changes in tax rates or structure affect the relative advantages for the corporation and its shareholders of these two means of financing. Although the direction of the effects may be indicated, there is no sound evidence on which to base quantitative estimates of their size.

A rise in the rate of corporate income tax would induce corporations to issue more debt and less equity. A lowering of the rate would encourage



the use of equities rather than debt. An increase in the rate of personal income tax would favour the issue of equities and the use of retained earnings. (This pattern of financing would allow a larger portion of the return to be taken as tax-free capital gains at the time the shares are sold.) 4/ Naturally these inducements to change the corporation's pattern of financing could only operate if the market prices of securities moved so as to make the change advantageous. All that can be said a priori is that the tax changes would alter the relative amounts of tax on the two types of financing. Tax rate changes in the past decade have neither been frequent enough nor of sufficient magnitude to provide reliable evidence of the extent to which the pattern of financing does alter in response to changes in the relative level of taxation on the various forms of financing.

Over a long period, the relative demise of preferred shares as a source of funds may be viewed as a reflection of the higher corporate income tax rate. Some corporate officials noted in interviews that it was only a conventional view of what constituted an "appropriate" capital structure that made their firms continue to issue preferred shares. Over the past decade there have been occasions when pressures in capital markets (as in 1956-7) were great enough, and the prices of shares high enough in relation to those of bonds, to make preferred shares desirable. 5/ But in general, corporations have considered preferred shares "too costly". The interest rate on preferred shares has often been lower than on corporate bonds, 6/ but not by enough to make them equivalent in cost from the corporation's point of view.

The degree to which short term borrowing can be substituted for long term, or borrowing substituted for the sale of shares, will depend not



only on the explicit costs of the various types of funds, but also on the conventions which determine the "appropriate" relationship between debt and equity. If the maintenance of a conventionally established debt-equity ratio is treated as a primary goal of corporate financial policy, then changes in the relative costs of debt and equity need not be expected to affect the pattern of financing. A brief examination of the financial policies of large firms reveals that with a fairly stable tax treatment of interest and dividends, many firms obtain new funds in the proportions dictated by a target debt-equity ratio which remains fairly stable over time. Chapter 5 contains a discussion of the influence of established ratios on the reaction of the firm to changes in relative costs. Since the flexibility of conventional financing ratios in response to changes in tax treatment has seldom been tested, 7/ our reasoning must be more or less hypothetical. Chapter 5 indicated that conventions establishing "appropriate" debt-equity ratios were subject to change under sufficient incentive, whether the operative conventions have been those accepted by brokers and finance houses, or those adopted by the firm itself. 8/

If there were major changes in the tax structure making changes in financing mutually advantageous for corporations and the providers of funds, it must be supposed that the conventions adopted by firms, financial dealers, and security buyers would also change. If changes in tax rates were relatively small, there might be no noticeable changes in the debt-equity ratios and dividend-pay-out ratios thought to be "appropriate", although there might be marginal shifts in the longer run pattern of financing. 9/

Evidence relating to changes in the pattern of financing in response to changes in interest rates may be helpful in indicating the nature of

the adjustments in financing that might follow a minor shift in the rates of corporate or personal taxation.

All the firms with assets over 5 million dollars, and 800 firms below that size, were surveyed by questionnaire and interview on behalf of the Royal Commission on Banking and Finance to determine the effects of changes in credit conditions on capital expenditures. Among other things, the corporations were asked whether changes in credit conditions had in 1959-60 led to the issuance of share capital rather than bonds or other fixed interest obligations. Among the approximately 650 responders with assets over 5 million dollars, approximately 1% 10/ issued share capital rather than bonds in 1959-60 because of the increase in interest rates. This would indicate a very modest degree of cost sensitivity on the part of corporations obtaining new funds if it were not the case that period to period changes in bond and equity yields have been fairly closely correlated during the past decade. Thus, for one reason or another, the short term increases in interest rates have been paralleled by short term increases in earnings yields on equities.11/ This has had the effect of reducing the incentive for corporations to change their sources of finance.

Corporate financial policy provides what is probably a more adequate explanation of the relatively small degree of switching from bonds to equities as a source of funds when interest rates rise in the short run. The majority of equity-issuing corporations interviewed indicated that they issued share capital only when necessary to restore the debt-equity ratio to what they consider to be a suitable level. These corporations had a view that equity finance was considerably more expensive than debt finance, but were unwilling to issue debt beyond a certain extent dictated by their own standards of financial propriety or by advice from outside

financial advisers. Since about 30% of the firms surveyed issued share capital at any time during the period 1955-62, many of them viewing the debt-equity balance in the way described above, it is not surprising that only about 1% of all the firms surveyed issued shares rather than fixed interest obligations when credit conditions tightened during 1959-60.

There is little other evidence available concerning the short term effects of changes in relative costs on the pattern of corporate financing. The interview evidence is not much help in this area, since the questions, except those referring to significant past changes in interest rates, must be hypothetical. Few tax changes in the past decade have been great enough to cause financial policies to be reassessed, so that interviews cannot provide reliable evidence of the probable effects of future changes.

One of the quantitatively more important tax changes affecting the relative costs of bonds and equities was the introduction of the dividend tax credit of 10% in 1949, and its raising to 20% in 1953. The effects of this measure were either too diffuse or too far in the past for interviews to provide useful information. A statistical analysis of the movements of security prices might help to indicate the effects of the measure, at least on the relative costs of bonds and preferred shares.

#### MEASURES AFFECTING THE FINANCING OF FIRMS CONTROLLED ABROAD

There are several ways in which recent changes in Canadian tax treatment have affected the financing of firms controlled outside Canada. Most of them are too complex to be considered in this brief discussion. None of them will be dealt with in detail.



### Withholding Tax

To the extent that the parent corporation has taxable income in its own country, the 15% Canadian withholding tax paid may be used as a tax credit in the other country. Prior to December 1960, the withholding tax applied at the reduced rate of 5% for certain types of wholly-owned subsidiaries of non-resident parent corporations. The 1960 change removed a previously existing incentive for certain wholly-owned subsidiaries to remain wholly owned, since the 5% withholding tax would result in a lower net tax burden than the 15% tax for some firms not able to offset the entire withholding tax paid against taxes levied in other countries.

The 15% tax (introduced in 1961) on the net profits after taxes of non-resident corporations operating in Canada encouraged the incorporation of the Canadian operations of foreign firms. This provision introduced a tax advantage for incorporated subsidiaries over unincorporated operations, since for corporations the withholding tax need not be paid until the dividends are actually transferred to the parent company, while the tax on the profits of the unincorporated subsidiary is paid at the time the profits are earned. The 1963 change in the withholding tax, the introduction of a 10% rate for corporations with a specified degree of Canadian ownership and a 20% rate 12/ for those without it, is likely to have more profound effects on the methods of financing adopted by subsidiary corporations. The 1963 withholding tax change will be considered together with the other 1963 measures designed to encourage foreign-controlled corporations to sell shares in Canada.

### 1963 Changes

The June 13, 1963 Budget proposed a 30% tax on certain security sales,



differential withholding tax rates, and accelerated depreciation allowances for corporations with a specified degree of Canadian equity participation. The 30% tax on security sales was dropped, but the other measures became law as Bill 95. Due to apparent difficulties in determining whether the necessary degree of Canadian ownership was achieved by corporations, the definition of the required Canadian ownership was revised in a supplementary budget statement on July 8th. The definition now requires that the corporation be beneficially owned 25% by Canadian residents or that its shares 13/ be listed on a Canadian exchange and not held more than 75% by one or an associated group of foreign shareholders. The corporation's board must by 1965 have 25% Canadian membership. Although there is some doubt about the present status of a number of large corporations, it would appear that approximately 20 of the 70 largest corporations will be subject to the higher rate of withholding tax and be ineligible for the 50% depreciation on Class 8 assets unless they alter their capital structure. A complete survey of these large corporations has not been undertaken, but those firms contacted were of one mind that the measures combined to produce what they considered a significantly heavier tax load on the non-complying corporations. To give some idea of the decision lags involved, none of the corporations contacted had made even a preliminary decision on the matter by the end of August 1963. In all cases the matter was "under serious consideration".

- \* One official expressed a personal view that the corporation would take whatever steps were necessary to increase the degree of Canadian participation. He could not foresee that the relatively modest decrease in the parent company's voting control would have any effect at all on the company's actions, beyond the fact that they "would be second class citizens" if they did not ensure that they would be paying 10% rather than 20% withholding tax. 14/

- \* The president of another firm noted that the new measures would put his firm at a severe disadvantage in competition with other firms in the industry. He said that this tax discrimination might lead his firm to make new investment in the United States rather than Canada. (Investment decisions of subsidiaries will be described in Appendix III.) The implications of the measures were still being considered by the parent company management.

The full impact of the measures obviously could not be assessed so soon after their introduction, even before they had become law. One official expressed an apparent willingness for his firm to wait and see whether the Canadian equity market was deep enough to take the large volume of securities which might be offered. It was his personal view that equities would drop sharply in price as a result.

The evidence collected for this study can provide no direct help in the assessment of these specific tax policies. It might nevertheless be helpful if the methods used throughout the study were employed to give some measure of the quantitative importance of the incentives to sell shares in Canada.

- \* A manufacturing firm is a wholly-owned subsidiary of a foreign corporation. The parent company has adopted a 10% rate of discount as representative of the cost of capital for its operations in relatively stable countries. From their existing Canadian plant and equipment, maintained by capital expenditures each year equal to normal capital cost allowances, 15/ the firm expects to gain 4 million dollars per year after a 50% corporation tax, normal capital cost allowances, and a 20% withholding tax (assuming all net profits transferred to the parent company) for the next 15 years. (Fifteen years is considered by the firm to be their effective planning horizon.) Taking December 31, 1964, as the point of comparison, the present value of the firm's investment at a 10% rate of discount is 30.4 million dollars. 16/ The value of the tax advantages accruing to a similar firm with a 25% Canadian ownership would be the present value of the 625,000 17/ dollar annual reduction in withholding tax, which is 4.75 million dollars at a 10% rate of discount. If the parent company were able to sell 25% of the shares to Canadians at a price which would yield a discounted cash flow return of 10% to the Canadian shareholders (8.8 million dollars for a 25% interest), the return on the parent company's remaining holdings would rise to 13.7%. If it were necessary to offer a higher return to the Canadian shareholders in order to obtain the necessary funds, the parent company could offer the shares

at a price low enough to produce a 26% discounted cash flow return for the Canadian shareholders, while still maintaining a 10% return to the parent company on its 75% interest.

If June 13, 1963, were taken as the date of comparison, the parent company would have less incentive to establish immediately a minority Canadian interest for withholding tax reasons, but would have to consider the additional depreciation incentives which are only available for firms with the 25% Canadian interest. Assuming that the firm has capital expenditures of 4 million dollars per year, of which 2.5 million dollars are for machinery and equipment <sup>18/</sup> (full re-investment of normal capital cost allowances), the present value of the accelerated depreciation as at June 13, 1963, would be approximately 435,000 dollars. <sup>19/</sup> The present value of the differential withholding tax would be slightly less than that at the December 31, 1964, comparison date, since the difference between the two rates will be 5% until December 31, 1964, after which time it will be 10%. The present value at June 13, 1964, of the withholding tax advantage of establishing the Canadian ownership requirements would be 4.45 million dollars. The total present value of the incentives, not taking any account of the incentives for investment in areas of slower growth, would therefore be (4.45 plus .435) 4.85 million dollars, or slightly more than if the point of comparison were taken as December 31, 1964. <sup>20/</sup>

The foregoing example was calculated on the assumption of a 10% withholding tax for firms with the stipulated degree of Canadian ownership, and a 20% rate for those without it. There is also an implicit assumption that the foreign corporations paying the higher rate are not in a position to utilize the higher withholding tax as a foreign tax credit to reduce taxes paid in their own country. The first assumption was falsified when the 1964 budget reduced the differential between the rates from 10% to 5% by making the higher rate 15% rather than 20%. To find the effects of the 5% differential on the present value of the example project, it is necessary to divide by two the present value of withholding tax reduction based on the 10% rate differential. But neither the original calculations nor ones adjusted for the 1964 budget changes are realistic if foreign firms are able to use any withholding tax payments to claim foreign tax credits.



Consider the case of a U.S. corporation with a subsidiary in Canada. The taxes paid to the Canadian Government consist of corporate income tax plus 10% or 15% withholding tax. The firm then pays U.S. taxes on the dividends remitted, "grossed up" to a taxable income large enough to allow the dividends in question to be paid. The difference between the actual dividends and the "grossed up" dividends may then be used as a foreign tax credit against U.S. income taxes payable, up to a maximum rate equal to that paid on domestic U.S. income. That is, for a U.S. firm with foreign operations in one country only, the full amount of any income and withholding taxes paid may be used as a tax credit against U.S. income taxes, but only so long as the effective total tax rate in the foreign country is equal to or less than the rate in the U.S. The effects on the tax credit of a change in the Canadian withholding tax thus depend on both the Canadian and U.S. rates of corporate income tax. 21/ Since U.S. firms can pool their foreign tax credits, the effects will also depend on the amount of other income received by the U.S. firm from foreign sources, and the effective foreign rates of taxation on the other income.

To generalize, the differential Canadian withholding tax rates only offer an incentive for firms to sell shares in Canada if, within the firms' planning horizon, the higher withholding taxes could not be utilized as foreign tax credits. Officials in several firms suggested that the existence of many countries with tax rates substantially below those in the U.S. allowed most large firms to utilize all their foreign taxes as tax credits. In these circumstances, an increase in the Canadian rate of withholding tax increases the incentive to invest in low tax countries to provide a means of using the higher Canadian taxes as tax



credits. Whether the institution of differential Canadian rates according to ownership will induce firms to change their share structure will depend on the relative rates of return on investment programmes available to the firm in Canada, other foreign countries, and the U.S., the imputed costs and risks of changing the share structure, and, of course, the firm's present ability to utilize foreign tax credits. 22/ Even for U.S. firms with no investment opportunities in foreign countries other than Canada, the differential withholding tax might not provide a strong incentive to alter financial structure if the U.S. firm were able to hold financial assets in Canada subject only to the withholding tax and not to the corporate income tax. By holding a sufficient volume of these financial assets, a firm could "average down" the ratio of Canadian taxes/income remitted to the U.S. firm until all the Canadian taxes could be used as foreign tax credits. The possibility of such arrangements reduces the influence of the differential rates without eliminating it entirely.

To predict the net impact of the differential withholding tax rates on the financial structure of firms controlled abroad, it would be necessary to gather substantial information about the U.S. and foreign tax position of the U.S. parents, and to make similar studies of the tax positions of parent firms of other nationalities. Such detailed analysis might reveal the size of the effective differential introduced by the two withholding tax rates. U.S. firms whose only feasible foreign investment opportunities are in Canada are those most likely to be influenced by the differential rates. Interviews with firms in this position suggest that if the inducement is not strong enough to lead these firms to list their

shares in Canada, it is either because:

- (a) there are large implicit costs of having minority shareholders, possibly due to disclosure requirements, conflicts of interest, or the high costs of issuing and listing shares;
- (b) the revenue prospects of the firm are so much more highly valued by the parent corporation than by potential Canadian shareholders that a mutually satisfactory share price cannot be found.

## REFERENCES

- 1/ In addition, dividends from Canadian corporations whose mineral profits are 25% or more of their income are subject to a depletion allowance of from 10% to 20% of the dividends received, the rate depending on the fraction of total income derived from minerals (Part XIII, section 1500 of the Income Tax Regulations).
- 2/ Bond discount is an exception to this. The discount is treated as a capital gain in the hands of the bond-holder, and amortization of discount is not a deductible expense for the issuing corporation. Changes were made in the Income Tax Act in 1961 (section 7, subsection (2)) to make bond discount taxable in certain instances.
- 3/ This is the case only for a Canadian resident lending to a Canadian corporation. Interest payments to non-resident lenders are subject to 15% withholding tax which the lender may or may not be able to utilize fully as a tax credit against taxes to be paid in his own country.
- 4/ Assuming that the market value of the shares rises to reflect the higher book value.
- 5/ The issuance of redeemable preferred shares as a means of distributing the tax-paid undistributed income arising when the 15% tax is paid under section 105 of the Income Tax Act has not affected the net issue figures much since they show the current issues net of current redemptions.
- 6/ The dividend tax credit has itself probably been a factor in the determination of the relative yields of preferred shares and bonds.
- 7/ Although there is some evidence that firms have been willing to alter their mix of debt and equity financing, at least in the short run, in response to changes in the relative attractiveness of debt and equity markets. See Chapter V of Young and Helliwell, The Effects of Monetary Policy on Corporations, op.cit., p. 335.
- 8/ In most cases the market conventions are less conservative than those set by the large firms themselves.
- 9/ There might be larger changes in the short run if the tax changes were thought to be temporary, since all the firms not immediately constrained by their financial ratios might move at once to take advantage of the temporary opportunity.
- 10/ The original questionnaire answers indicated that approximately  $2\frac{1}{2}\%$  of the firms had issued equities because of the tighter credit conditions; this figure was revised downward in the light of a number of follow-up interviews. The tables in Chapter V, p. 335, of The Effects of Monetary Policy on Corporations, present the survey responses in more detail.

- 11/ If the monthly series 1954-62 of the McLeod, Young, Weir and Company index of 10 industrial bond yields is compared with the Canadian Business Service Limited Index of the earnings yields on 100 leading common stocks, the positive correlation between the first differences of the two series is significant at 5%, as is the negative correlation between the series themselves. (The latter correlation illustrates that the two series have opposite trends over the past decade.)
- 12/ In the 1964 budget resolutions the rate of withholding tax payable by firms without the necessary degree of Canadian ownership was reduced from 20% to 15%. The budget speech gave as the reason for the change the reduction in the U.S. corporate income tax rate from 52% to 48%. House of Commons Debates, Vol. 109, March 16, 1964, p. 978.
- 13/ The 1964 budget resolutions specified that the listing requirement would be satisfied if the listed shares represented "in the aggregate not less than 50 per cent of ... all the issued and outstanding... equity shares of the corporation ...." House of Commons Debates, Vol. 109, March 16, 1964, p. 985.
- 14/ This interview took place before the March 1964 budget made the rates of withholding tax 10% and 15% rather than 10% and 20% as originally proposed in the June 1963 budget.
- 15/ i.e., 20% on Class 8 assets (machinery and equipment) and 5% on Class 3 assets (buildings) by the declining balance method.
- 16/ These calculations ignore for the sake of simplicity the value of the plant at the end of the 13-year period.
- 17/ i.e., 20% x 4 million - 10% x 3 million, since there would be no withholding tax on dividends paid to Canadian shareholders.
- 18/ These figures are derived from the ratios applicable for all manufacturing corporations, as indicated by Taxation Statistics 1962, page 137, and Private and Public Investment in Canada - Outlook 1962, Department of Trade and Commerce, 1962, page 12, the figures used referring to the 1960 fiscal and calendar years respectively.
- 19/ Being the present value (using a 10% discount rate) of the change in capital cost allowances on Class 8 assets from 20% on the declining balance to 50% straight line on assets purchased between June 13, 1963, and June 13, 1965.
- 20/ The comparison as at December 31, 1964, did not include the value of the accelerated depreciation available for expenditures between January 1, 1965, and June 13, 1965. If this were taken account of, the present value at the two comparison dates would be almost exactly the same (4.85 million dollars).
- 21/ Thus the 5% reduction in the U.S. corporate income tax was given as a reason for reducing from 20% to 15% the maximum rate of Canadian withholding tax. There was no suggestion of a parallel reduction in the 10% rate. Budget Address, March 16, 1964, House of Commons Debates, Vol. 109, March 16, 1964, p. 978.



- 22/ For a more thorough analysis of the effects of differential tax rates on the international allocation of investment, see P.B. Richman, Taxation of Foreign Investment Income: An Economic Analysis, The John Hopkins Press, Baltimore, 1963.

## CHAPTER 12—TAXATION AND LOCATION DECISIONS

This section will deal only with two corporation income tax changes designed to influence the location of new businesses within Canada. It is assumed here that a corporation is contemplating an expansion of its activities in Canada. Matters affecting the comparison of investment in Canada with investment in other countries will be considered briefly in Appendix III.

Location decisions were not analyzed in any great depth during the course of research for this study, and the contribution of this chapter will rest mainly on a comparison of the quantitative effects of various special tax provisions on the marginal efficiency of certain types of investment. Basically, any incentive of this type is likely to be effective if the investment in question is not location-specific, that is, if it is an investment whose costs and revenues will not vary significantly according to its location. Clearly the bulk of capital expenditures in Canada (utilities, transportation, extractive industries) are location-specific to a high degree. But there are many for which the location is not determined necessarily by the character of the investment, and it is at this type of investment that special tax measures have been aimed.

Although this chapter uses an analysis of the quantitative impact of tax measures on the return on investment as a measure of their significance, this kind of reasoning must be treated with some care. Research into the determinants of location decisions appears to indicate that non-financial factors are often more important in these decisions than in

normal investment decisions. 1/ If this is so, then the potential influence of taxation measures on location decisions is correspondingly less. The interviews conducted during the summer of 1963 did not provide much information about location decisions and the potential effects of taxation on them. At that time the 1963 measures were too new to have played a part in past location decisions, and the frequency of moves to new locations is low enough that example cases of actual location decisions were difficult to find. In the hypothetical discussions that were carried on, and in the responses to the Taxation Commission's questionnaire, another fact appeared which will create difficulties for subsequent analysis of location decisions. Several comments in interviews and questionnaires were made to the effect that location decisions (especially) were made for "economic reasons", because of the "economics of operation in various regions" and not because of tax incentives. If taxes were determinants, they were so only in a negative sense: high taxes might discourage a move to a certain area, but tax incentives would never be the reason for a move. The foregoing is perhaps an unfair caricature of the actual comments that were made; but it serves to illustrate in a few lines the difficulties inherent in assessing subjective interpretations of decision-making. These difficulties are mentioned here because they are especially obvious when the analysis is concerned with matters such as location decisions, where personal factors play an important part and alternatives are seldom assessed on a fully comparable basis.

#### REGULATION 1108 - 1961

This regulation provided additional capital cost allowances in respect of products new to Canada or new to a surplus manpower area.

Location decisions are involved because the definition of "new to a surplus manpower area" includes a wider range of products than does the definition of "products new to Canada". Thus, for a certain range of products which are not new to Canada but are new to certain designated areas, there were one-year increases granted in the capital cost allowances obtainable on new equipment and buildings. The effects of the regulation were discussed in Chapter 7; it will be recalled that only one respondent to the Taxation Commission's questionnaire had had any tax deferment under the regulation, and none considered it to have any effect on their decisions. The effects of the regulation on the profitability of investment may be illustrated by means of a hypothetical example:

- \* A firm is contemplating the establishment of a branch plant in a new location. The preliminary rate of return calculations specify an initial investment comprising buildings equal to 50% of the total investment, working capital (inventories and accounts receivable) 20%, and machinery and equipment 30%. The firm uses a 10% rate of discount to represent its cost of capital. The present value of the Regulation 1108 acceleration is 1.5% of the cost of the building and 3% of the cost of the machinery. The total present value of the incentive at a 10% rate of discount and a 50% rate of corporate income tax is equal to 1.6% of the initial investment in the project.

### 1963 CHANGES

The June 13, 1963 budget proposed that a new manufacturing or processing business located in a designated area, and coming into commercial operation within the 24 months following the enactment of the provision, would be exempt from income tax for the 36 months following the date of commencing of operations. 2/ Further, the budget proposed that these businesses could claim capital cost allowances up to a maximum rate of 20% straight line on buildings and 50% straight line on machinery and equipment. The proposals were enacted on December 4, 1963.



A 1964 amendment extended until April 1, 1967, the date before which a firm must commence operations in the designated area if it is to qualify for the tax incentives.

A hypothetical example will serve to illustrate the effects of the provisions on return on investment:

- \* A firm is contemplating the establishment of a branch plant in a new location. The preliminary rate of return calculations specify an initial investment comprising buildings equal to 50% of the total investment, working capital 20%, and machinery 30%. A 15-20 year income of 20% of the total initial cost of the project would allow the project to produce the company's required 10% minimum rate of return, assuming a 50% rate of corporate income tax. Using the computations of present value presented in Chapter 7 of the study, the value of the accelerated depreciation is equal to 13.6% of the entire initial investment of the project. <sup>3/</sup> The 36-month tax holiday has a present value equal to 24.9% of the initial outlay for the project if it is assumed that the average revenue is achieved in the first year of operation. If the first year revenue before tax and depreciation is only one half of the average for later years, the present value of the tax holiday drops to about 20% of the initial outlay. The total present value of the tax incentives is equal to 38.5% of the cost of the project if the revenues start at full value in the first year, and 34% if the first year earnings are only one half of those in later years.

The above example illustrates the significant size of the tax changes. The present value of the tax reductions for the project described is equivalent to a decrease in before-tax expenses of 5% of the total cost of the project each year for 15 years. Thus the annual operating costs in the depressed area can be higher by any amount less than 5% of the initial investment and the corporation with a 10% return requirement might be better off to locate there. Alternatively, if the operating costs are the same in the depressed areas, the capital costs of the buildings and machinery could be almost 50% higher in the depressed area and the move would still be advantageous for the corporation on the cost and revenue assumptions employed in the example.

The actual effects of these provisions will depend on a number of factors which the research for this study was not designed to discover. It may not be possible to discern the effects until perhaps the middle of 1964, but the strenuous debates in the House of Commons over the definition of the "area of slower growth" demonstrate that there has been considerable recognition by businessmen and regional developers that the measures are quite significant. It might be supposed that the sum of the incentives is great enough to influence a large proportion of non-location-specific investment in those regions where some of the feasible sites are in the designated "areas of slower growth" while other sites in contiguous communities are not.

An examination of the applications received by mid-1964 showed that most of the new businesses are moving to the designated areas which are close to the major industrial areas (and therefore relatively close to alternative sites in non-designated areas). Only one of the eight case study firms has yet located a major new plant in one of the designated areas of slower growth. Officials of the firm said that the site would probably have been chosen anyway, since the over-abundant labour supply that led to the area being designated as one of slower growth also made it an attractive location for a plant requiring a considerable labour force.

By the end of June 1964, the Department of Industry had received a total of 88 applications for the 36-month tax exemption for new businesses in the designated areas. The proposed capital cost and employment of the new businesses total \$189 million and 7,700 men respectively. Approximately \$50 million of the capital cost is to be for new building subject to the special capital cost allowances. A large majority of the applications

are likely to be approved, but without more detailed information it cannot be said to what extent the location of these businesses has been affected by the special tax provisions, although the large number of applications in certain of the areas near the major centres of population indicates a substantial shift of investment.

It would be useful to study these decisions to start businesses in the designated areas. It may be that the special measures designed to affect location decisions have induced firms to consider more fully the costs and consequences of alternative locations. If consideration is being given to location as a variable in investment decisions, it should be possible to discover more precisely the effects of alternative locations on the expected costs and revenues of different types of investment.

#### REFERENCES

- 1/ A survey of decision-making in 188 manufacturing plants in Michigan indicated that personal reasons played a preponderant role in many location decisions. See George Katona and James N. Morgan, "The Quantitative Study of Factors Determining Business Decisions", The Quarterly Journal of Economics, Vol LXVI, 1952, pp. 67-90.
- 2/ Budget Resolutions, House of Commons Debates, Vol. 108, June 13, 1963, page 1009.
- 3/ Assuming that no capital cost allowances are claimed until the 36-month tax-free period has passed. If the corporation has other income subject to tax, so that the capital cost allowances could be used sooner, the present value of the acceleration would be larger.



## CHAPTER 13—CHANGES IN THE CORPORATION INCOME TAX RATE

Many respondents to the Taxation Commission's mail questionnaire suggested a decrease in the general level of the corporate income tax as a preferred substitute for one or all of the special tax measures referred to in the questionnaire. The reduction or abolition of the corporate income tax was frequently recommended by interviewed executives as a potent stimulus to investment. There were no suggestions made that the rate of corporation income tax should be varied up and down over the business cycle to counteract swings in investment. Since the changes in the corporate tax rate in the past decade have been small enough to be considered insignificant by most corporate planners, there is little evidence which could be gathered to use in assessing the statements that a lowering in the tax rate would stimulate investment.

The effects of a change in the corporate tax rate were not a matter for specific discussion in the interviews conducted on behalf of the Taxation Commission. It is difficult enough to get corroborative statistical and documentary evidence for estimates of the specific effects of taxation changes which have already taken place; it would be foolish to attempt to get reliable answers to direct questions about the reactions of a complex decision-making group to a hypothetical tax change quite different from the actual changes which have taken place. The few comments which executives did make about the effects of a lower tax rate exposed the difficulties of applying partial equilibrium analysis in situations when all other things would not be equal. The same difficulties confront anyone who attempts even in theory to estimate the pattern

of reaction to a major shift in the tax structure. An answer would require the analysis of a hypothetical, but nevertheless complex, dynamic system of unknown characteristics. For relatively minor changes in the tax rate the problems are less severe. A rate change of perhaps 10% can be considered without the assumptions that the capital markets, goods markets, and industrial structure remain constant being too far-fetched. Even after such small changes there would be some changes in the pattern of prices and production which could not be easily estimated. There is not space here to trace even in a partial way the probable long run effects of a once-for-all change in the corporation tax rate. The methods used throughout this study might, however, be usefully applied to demonstrate the effects of a rate shift on the anticipated rate of return on investment during the period when the pattern of costs and prices can be assumed more or less unchanged. The entire study has concentrated on the effects of various tax measures on investment without any specific assumptions being made about the adjustments in other tax rates or government spending which might be among the likely final effects of the tax changes. Presumably, a balanced assessment of tax policies would take account of such matters when comparing alternative provisions.

The effects of a change in the corporate income tax rate on the attractiveness of investment opportunities depend on the assumptions which are made about the tax rates which are likely to apply throughout the period for which revenues will be earned from a capital expenditure made now. If a rate change is expected to be a permanent one, the assumption about future tax rates can be made easily, but an additional element of uncertainty surrounds the estimates of the future factor costs

and selling prices. If the rate change is announced as, or is expected to be, temporary, the effects on anticipated rates of return will depend on expectations about how long the new rate will last and what rate will replace it. A rate change which is announced to be temporary and for a specific purpose may easily produce expectations that the rate will be moved in the future for similar policy reasons. The appropriate rate to be used for project assessment will in these cases depend on expectations about the likelihood of conditions arising in which the tax rate would be adjusted to certain levels. If the decision-maker expects that the rate changes will be made in an appropriate counter-cyclical pattern, he can take account of them by modifying the adjustments he makes for cyclical variations in costs and revenues. A more likely situation is that neither cyclical fluctuations in gross revenues nor in tax rates are taken directly into account in planning capital expenditures. In these circumstances, an average tax rate would be used in assessing investment proposals. If there were a change in corporate tax rates which were announced to be temporary, firms might evaluate proposals using the new tax rate for the period for which it is expected to apply and the "normal" rate for subsequent revenues. Some example assessments will be made on these assumptions.

In Chapter 7 on the effects of depreciation changes there were a number of calculations made showing the effects of various depreciation provisions on rates of return. The calculations in that chapter assumed a 50% tax rate. The hypothetical examples below assume that a 50% tax rate is considered to be "normal", and show the effects of a 10 percentage point change in tax rates which is expected to last for either one or three years. Various assumptions are made about depreciation provisions, size of revenues, and length of asset life.

Description of ProjectD.C.F. Rates of Return 1/

With Tax Rate of 50% Throughout the Life of the Project	With Tax Rate of 40% Assumed for 1st Year, 50% Thereafter	With Tax Rate of 40% Assumed for 3 Years, 50% Thereafter
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(1) A building is expected to last 25 years and to produce an annual income (before tax and depreciation) equal to 15% of the building's initial cost. Depreciation rate is 5% on the declining balance.

7.9%

8.0%

8.2%

(2) A machine is expected to last 7 years and to produce each year an annual income (before tax and depreciation) equal to 25% of the initial cost of the machine. Depreciation rate is 20% on the declining balance.

8.2%

8.4%

8.8%

(3) Same asset, gross earnings, and depreciation rate, except that the earnings do not start until the second year of the machine's life.

8.2%

7.7%

8.2%

(4) Same asset and gross earnings; depreciation rate 50% straight line.

11.7%

10.8%

10.9%

(5) A machine is expected to last 4 years and to produce annual income (before tax and depreciation) equal to 50% of the initial cost of the machine. Depreciation rate is 20% on the declining balance.

15.0%

16.1%

18.4%

(6) Same asset, gross earnings, and depreciation rate, except that no depreciation will be claimed until the tax rate rises to its normal level.

15.0%

15.3%

15.6% 2/



The calculations assume that other income is available against which to apply depreciation allowances in those cases where income from the project is less than the capital cost allowances. All of the examples, except number (3), assume that a full year's income is produced by the project, and all except number (6) assume that full capital cost allowance is claimed in the fiscal year that the assets are purchased. The effects of raising the tax rate to 60% are of approximately the same size, but in the opposite direction to, the effects shown in the examples above.

The examples above demonstrate that a temporary lowering of the corporate tax rate will increase the indicated rate of return on new investment only on those projects for which the annual income before tax and depreciation is expected to exceed the related capital cost allowances during the period for which the lower tax rate is expected to apply. If the total of depreciation allowances claimed (related to the new project) is more than the total of income earned from the project during the period when the tax rate is lower than normal, the benefits to be gained from the lower tax rate are considerably reduced, and may be eliminated entirely. In order to get any net benefit from the tax reduction, it is necessary that the firm actually pay some taxes at the lower rate. This can be arranged by deferring depreciation allowances and other allowable offsets against income until the income tax rate is at a higher level. Such a procedure will only be to the firm's advantage if the present value of the delayed write-off is greater than the present value of the taxes that would have to be paid at the current rate. A tax reduction might have to be considerable before there would be any reduction in the net present value of tax payments by a firm in these circumstances.

However the tax payments are manipulated, the effects of a temporary 10% change in the corporate tax rate on the anticipated rate of return on new investment are modest if the income from the project begins immediately, and may not exist if the income begins after some time lag. 3/

A comparison of the examples in this section with those in the section on depreciation provisions indicates that a tax rate reduction, if temporary, would have considerably less effect on the profitability of new investment than would, for example, a doubling of depreciation rates for new assets purchased during a specified period. This indication is probably not misleading when comparing tax rate changes with depreciation provisions for new investment of equivalent fiscal cost, since the tax change applies to income from all assets while the depreciation change may be related only to new investment. There are, however, two qualifications which must be made; the first deals with the effects of changes in cash flow, and the second with the effects of tax measures on reported net earnings.

(1) The use of discounted cash flow assessment procedures may overstate the benefits of depreciation acceleration in comparison to tax rate changes or investment credits. If the target rate of return, or the interest rate which is used for evaluating projects is higher than the cost to the firm of low-risk capital, the calculations will exaggerate the value to the firm of accelerated depreciation. The appropriate measure of the value to the firm of accelerated depreciation is the opportunity cost of the funds involved. A project's own rate of return or a target rate of return may easily overstate the value of the cash to the firm. The use, for discounting purposes, of any rate higher than the

return from the next best available investment of equivalent risk 4/ will exaggerate the benefits of accelerated depreciation in relation to tax reductions or investment credits. Similarly, it will exaggerate the costs of deferred depreciation in relation to tax rate increases or investment taxes.

In general, the analysis in Part Two of the study has relied upon d.c.f. rate of return calculations as measures of the relative influence of various tax measures on investment decisions. Measures may be considered to be more "fiscally efficient" as investment incentives (or disincentives) if, per dollar of tax loss (or gain), they make a larger change in the anticipated rate of return on new investment. A relatively less efficient incentive would therefore be one which led to a larger current tax loss (for the treasury) for a given increase in the anticipated rate of return on new investment. Such a conclusion is misleading to the extent that a change in the anticipated rate of return on investment is not an accurate measure of the incentive to invest. Thus if tax changes have "liquidity" effects as well as "rate of return" effects, it may be inappropriate to compare the tax loss (which is, after all, a measure of the increase of corporate liquidity) with the rate of return effects as a guide to the "efficiency" of a tax proposal. This qualification assumes great importance when tax measures with equivalent rate of return effects have markedly different fiscal costs (and effects on corporate liquidity). A simple application of the rate of return analysis to the relative effects of a change in the corporate income tax rate and a change in taxes specifically related to new investment might overstate the relative efficiency of the investment-

oriented measures if corporate investment is affected by changes in liquidity as well as by changes in anticipated rates of return.

(2) No mention has been made of the possible effects of tax changes on statement net earnings, and of the relationship between statement net earnings and the firm's willingness or ability to invest. It is often suggested that tax deferments through accelerated depreciation are ineffective because the higher depreciation charges will reduce current earnings recorded in financial statements, and thereby decrease the firm's willingness to invest. It is expected that an investigation of the accounting methods used to deal with the 1963 depreciation acceleration will show that the depreciation allowed for tax calculation purposes is not also used as the depreciation figure used in the calculation of statement net income. It is likely also that many firms will not reduce their tax expense, but will rather credit the tax reduction to a deferred taxes payable account. Nothing definite can be said until further research is undertaken. At any rate, even if the accelerated depreciation is considered as a current expense in financial statements, it is unlikely that the related drop in statement net earnings would have any substantial effect on the corporation's willingness to invest or ability to raise funds (since the drop could easily be explained as merely facilitating a reduction of taxes).

There is one other related point. Tax measures which involve a deferment of taxes cause a current drain on the treasury (and increase corporate liquidity) in the same way as do reductions in the rate of tax. The influence of the two types of change on statement earnings will differ:



the tax reduction will almost certainly lead to an increase in reported after-tax earnings, while the tax deferment may well leave reported earnings unchanged (viz. the discussion in the preceding paragraph). This difference is independent of any effect that the measures might have on the indicated rate of return on new investment. To the extent that higher current earnings encourage investment and ease the obtaining of outside finance (see Chapter 3, page 72 and Chapter 4, page 90), measures that reduce taxes rather than defer them might have greater effects on investment than would be indicated by a comparison of the effects of the alternative measures on the anticipated rate of return on new investment.

These qualifications suggest that the effects of a tax measure on an indicated discounted cash flow rate of return may not represent accurately the relative effects of various tax changes on the willingness to invest of even those corporations using d.c.f. methods to evaluate investment possibilities. For firms using the ratio of gross revenue to the cost of an asset as the measure of return, most tax changes would not directly affect the calculated rate of return from investment (unless they were changes, like a change in the manufacturer's sales tax on machinery and building materials, which entered directly into the capital cost of the project). Firms using the ratio of after-tax income to the cost of capital assets as a measure of rate of return might or might not take account of a short term alteration of tax rates. If the current rate was considered to be representative of that which would be likely to apply over the life of the project, then it would probably be used in the calculations. If the current rate was thought to be a temporary deviation from the "normal" rate, then the "normal" rate would probably

be used. 5/ As these procedures are presently used, they do not usually take explicit account of the timing of depreciation allowances, so that depreciation changes would probably have no effects on rate of return calculations. Thus, for firms using average annual income as a measure of profitability, changes in tax rates (or changes affecting the capital cost of new assets) might have a greater effect (than would depreciation changes) on the attractiveness of new investment.

The attitudes of executives toward counter-cyclical changes in tax rates are, of course, of the greatest importance to a judgment of the effects of rate changes on the volume and timing of investment. It is difficult to achieve any precision at all in a survey of attitudes toward policies which have not been employed. What little information was obtained on this score is contained in the next chapter, describing businessmen's opinions of fiscal policy.

## REFERENCES

- 1/ The calculations use the simple formula (to be found in Table I of Chapter 1) for the project's internal rate of return.
- 2/ Although the total amount of taxes paid is less in example (6) than example (5), the discounted cash flow rate of return is less because greater amounts of tax are paid in the early years of the project's life.
- 3/ The net effect on the rate of return of such investment may in fact be negative if the increased profitability of fast-maturing investment projects causes increases in the prices of the inputs required for the investment project whose income does not accrue for some time
- 4/ The alternative which should be used for comparison is either the return on a virtually riskless investment, or a risk-standardized equivalent of a less predictable return. The comparison with a relatively certain return is appropriate because a depreciation acceleration or defement has, under most circumstances, little effect on the certainty that the related tax relief will be obtained.
- 5/ These statements can only be suppositions, as rate changes in recent years have not been large enough for any noticeable reaction to have occurred. For this reason it is dangerous to reason on the basis of the assessment procedures presently employed, as a major change in tax provisions might lead to changes in the methods used by firms in making investment decisions.

## CHAPTER 14—ATTITUDES TOWARD FISCAL POLICY

The previous chapters have included only passing references to the psychological effects of tax changes. Since attitudes and emotions are such important factors in investment decisions, an assessment of the total effects of tax changes on the pattern of investment requires a closer look at businessmen's attitudes toward fiscal policy in general, and tax changes in particular.

The significance of the way in which a tax measure is introduced is so great as to create difficulties for researchers trying to assess the consequences of tax changes. Are particular reactions due to the way that a certain tax measure was introduced, or to its effects on the indicated worth of new investment? There is no sure way of telling, and thus no way of predicting the effects of future tax changes unless there is some way of telling what will be the psychological reaction to them. This, in turn, will depend upon the way they are presented. The effects of taxation measures on formal calculations of return on investment can be determined on the basis of a few simple assumptions, and apply to one time period as well as to the next. They can be more easily interpreted if it is known what measures of rate of return are actually employed and what relevance the calculations have had to past decisions. But this circumstantial evidence is ancillary, and the basic points can be put across without its help. Attitudes cannot be analyzed in the same way. They cannot be accurately defined at any particular time, and even if they could, the attitudes of one time are only very loosely connected with those of another time.



Thus, although the way in which tax measures are received by taxpayers determines to a considerable degree the impact which the tax will have on their behaviour, evidence about attitudes is difficult to use in predicting the effects of tax measures. Even though a working knowledge of the taxpayer's opinions of tax measures, and of the effects of these opinions on investment behaviour, is essential for an evaluation of the effects of taxation on investment, a census of business opinions about the wisdom of fiscal policies would not necessarily be a reliable source of such knowledge. In any event, the research for this study was not extensive enough to allow the systematic gathering and interpretation of the views of corporate officials about the wisdom and efficacy of various fiscal policies.

There were several questions in the Taxation Commission's questionnaire which asked whether the respondents approved of the objectives of particular provisions and asked them to specify alternative policies if they thought the objectives could be achieved more effectively in some other manner. The answers to these questions displayed a variety of attitudes, but neither the questions nor the answers were specific enough to make worthwhile a detailed presentation of the results. The interviews conducted for the Taxation Commission often included discussions on various aspects of fiscal policy which served to reveal a number of different views of what monetary and fiscal policy are, what the effects of various policy measures are intended to be, and what are the objectives of specific policies. Such a variety of presumptions were made about the nature and purposes of fiscal policies that answers by mail to questions about unspecified "objectives of tax provisions" cannot be reliably interpreted. A few of the answers have been reported in the chapters dealing

with individual tax incentives. All that can be said about attitudes toward fiscal policy in general can be expressed briefly.

#### COUNTER-CYCLICAL TAX POLICIES

It was obvious in many interviews that the officials were not familiar with the counter-cyclical use of tax policy. For example, the factors described as limiting the application of hypothetical tax changes were frequently limits which would not be likely to be operative at the stage of the cycle when the particular tax measure would be employed. If a hypothetical tax change involved an incentive to invest, its potency was described as being restricted by the lack of engineering staff, disruption of the current flow of production, and long order times for new equipment. On further discussion it would appear that these limits have been much more significant at some stages of the business cycle than others, and would often not be operative limits to investment when there were no pressures on capacity. On the other hand, if a tax change involved a disincentive to investment, the person interviewed often expressed some puzzlement that such a measure would ever be considered, and surprise that such measures had actually been used in the Korean War period. A common opinion was that government policy is, and should be, to encourage investment, and that tax changes would, and should, be only in one direction. The prevalence of this attitude may be either because tax policies have not been vigorously used for stabilization purposes in recent years, or because counter-cyclical tax changes have either not been announced as such, or have not been so recognized by corporate officials. There were a few instances where officials thought that particular tax measures were or should be used for the purposes of

stabilization. For example:

- \* One vice-president commented that he thought measures such as the acceleration of depreciation for a short period of time were all right for the purposes of short term stabilization, but that long run growth was only likely to increase if the structure was changed so as to allow a greater reinvestment of earnings in expansion.

#### THE WEIGHT OF TAXATION

Officials would quite often refer to the general level of taxation as a deterrent to corporate investment and growth. The subject was not one which the interviews were intended to cover, but a conversation would often swing in that direction:

- \* A: "Don't you think that if we tried to superimpose another (25%) on our capital spending that there would be a "maybe" about it? It's strictly a matter of common sense.... Sure I could bring forth another (25%) of sales."  
Q: "All showing an adequate profit?"  
A: "Probably, but we're not going to do it, because we know that there is a limit to the amount of money that we're going to spend at any one time."  
Q: "What are the limits to the amount of money you can spend at any one time?"  
A: "I don't know. I've never tried to figure out what the limit is. Mind you, there's a lot of things that make people stop and think, and one is taxes. I can't think of anything that slows you up about doing things more than the way that we are taxed, taxed, taxed, taxed; and why are we taxed this way? Because people ask governments to do things for them that they refuse to do for themselves."

When explanations were sought of the particular ways in which taxation impinged on the investment programme of the firm, it was usually found that the objection was general rather than specific. The executives did not think that the high level of taxation necessarily restricted aggregate demand; the basic objection was to the diversion of purchasing power from individuals to governments. The solution lay not in reducing taxes with government spending constant, but in lowering both taxing and spending



and maintaining a balanced budget. There were usually no efforts made to relate the effects of a higher level of government spending and transfer payments to the demand for the specific products of the firm. The burden of taxation was not a subject which was brought up by most of the officials interviewed, and was not generally pursued very far when it was introduced.

#### STABILITY OF TAXATION

Several executives commented during interviews that variable tax provisions made planning difficult and put the firm in a position of not knowing what their tax liabilities would be on a given income. Presumably there lay behind this sort of comment the assumption that whatever tax changes did occur would not be reliably counter-cyclical. That is, they assume that the uncertain changes in taxes will exaggerate rather than offset other uncertain changes in costs and revenues. Occasionally there was a different basis for the request for tax stability: a dislike of the appearance of government policy affecting business decisions. For example:

- \* Speaking specifically of the research incentives, one vice-president said: "Anyway, I'm not entirely enthusiastic about these government measures to affect business activity. We like to make our decisions for good business reasons and not to take advantage of tax provisions."
- \* Speaking specifically of accelerated depreciation, another executive commented: "I doubt if any board of directors ever said 'yes' or 'no' to a capital expenditure because of a depreciation allowance or some other sop... I would just as soon that they stop fooling around with these gimmicks."

The points mentioned above recurred in a number of interviews, but none of them were frequently enough expressed either in particular firms or among all the firms to represent a majority opinion. The fact that



such opinions exist, and change over time, is enough to suggest that the ways in which specific tax measures are presented to taxpayers are important aspects of fiscal policy.

## CHAPTER 15—SUMMARY AND CONCLUSIONS—PART TWO

Although each of the chapters of Part Two is self-contained, it might be worthwhile to draw together some of the main points that have been made. In each of the chapters a different type of taxation policy has been discussed, sometimes with the aid of illustrative return on investment calculations, and in some cases with the help of direct evidence about actual investment decisions.

Chapters 7, 10, and 13 dealt with tax changes to alter, in the short run, the size and timing of capital expenditures. Among recent tax changes of this type, depreciation provisions appear to have had the greatest influence on the size and timing of investment outlays. Chapter 7 compared several recent changes in depreciation rules, and demonstrated that the changes of 1951 and 1963 had much greater impact on rate of return calculations than did those of 1961. Evidence from decision-makers suggested that a change in depreciation applicable only to investment during a specified period can lead to substantial shifts in the timing of certain types of outlay. <sup>1/</sup> For a variety of reasons discussed in Chapter 10, the sales incentive tax credit had almost no impact on investment spending. Chapter 13 used example calculations to show that alterations in the rate of corporate income tax would not substantially affect the expected rate of return on new investment unless it were thought likely that the new rate would continue at least as long as it took the revenues from the new investment to build up to the point where they exceeded the allowable depreciation and other offsets against income. There have been no substantial changes in the corporate income

tax rate and, therefore, no direct evidence to support the conclusion, based on the hypothetical examples, that the estimated rate of return on new investment is not sensitive to temporary changes in the tax rate. Changes in the rate of tax (or in the allowable depreciation rate) might, however, have liquidity effects on investment in addition to any effects on the expected rate of return.

~~Other~~ chapters of Part Two describe tax measures intended to influence the geographical or industrial distribution of investment, the pattern of corporate finance, or the development of new technology. These chapters differ from the rest of Part Two in that ~~these~~ tax policies are concerned with the structure and distribution of investment rather than its stability. Of the measures considered in Chapters 8, 9, 11, and 12, only those affecting research expenditures and location decisions are dated, while the others have come to be considered as continuing elements of taxation policy. Since the tax incentives for new businesses in areas of slower growth require that the businesses start operations by a certain date, they may be regarded as measures to alter the timing as well as the location of investment. Although the primary purpose of the measures was almost certainly to influence location decisions, the specific dating was chosen (and changed) to increase the incentive to relocate or start a new business soon, and to ensure that as much as possible of the induced investment would occur at a time when the economy was not expected to be operating with undue pressures on capacity.

The additional deduction for research and development (discussed in Chapter 11) is also dated, but interviews disclosed that many firms are planning their research and development outlays with the expectation that the 1966 expiry date will be extended. 2/ The measure is therefore likely

to affect the total amount more than the timing of research expenditures. Direct evidence on this point is hard to find, as the effects of the additional deduction are inevitably intertwined with those of the National Research Council and Defence Research Board research assistance schemes introduced at the same time. 3/

Chapter 12, on corporate finance, is rather different from the other chapters of Part Two, as it is less concerned with capital expenditures than with the ways chosen to finance given capital expenditure programmes. The first half of the chapter illustrated a number of the ways in which the forms of corporate financing are affected by the treatment of interest and dividends under the Income Tax Act. The second half of the chapter dealt with the effects of recent tax measures intended to influence foreign subsidiaries to sell shares in Canada. Because the effective size of the tax incentive depends almost entirely on the tax and revenue position of the firms' operations in foreign countries as well as in Canada, unqualified conclusions could not be made **about** the effects of the measure on the costs of finance. For firms whose profits, after taxation in all countries, are altered by the full amount of the withholding tax differential, the measure provides a substantial incentive to issue shares in Canada, unless the Canadian share market's expectations of the future profits of the firms are much lower than the profit expectations of the firm's current shareholders. Apart from this simple (and not typical) case, it is difficult to assess the effective size of the incentive. Direct evidence would be useful, but there was little available by the time research for this study had to be completed.

Chapter 9 was concerned with the effects of the special tax treatment of mining and oil development. Hypothetical rate of return calculations



indicated that the combination of percentage depletion, immediate write-off of drilling and exploration expenditures, and the existence of a tax-free period (for new mines) has a substantial impact on the incentive to invest. It was not feasible to proceed from these simple calculations to an assessment of the effects of the special tax treatment on the level of investment, since so much depends on provincial resource development policy, the attractiveness of investment in mineral development in other countries, and the ease with which the products may be exported or imported. We are able to conclude only that tax incentives of the size which have been used are likely to affect investment substantially, some of the change being in the distribution of investment among industries in Canada, and some in the international allocation of resource development activity. Specific estimates of even the roughest nature could not be made without the aid of a comprehensive international model of the allocation of factors and products.

The last two chapters of Part Two emphasized that the rate of return analysis of the earlier chapters could not provide a complete explanation of the effects of specific tax policies, since so much depends on the ways in which decision-makers react to the special provision. The way in which tax measures are introduced must, therefore, be analyzed as carefully as the details of the taxes themselves if reasonable predictions are to be made of the size and timing of their effects.

The evidence in all the chapters of Part Two is suggestive, but is not an adequate basis for an estimate of the aggregate expenditure impact of any of the tax changes considered. Further analysis of the effects of particular tax measures should be based on a quantitative formulation of

investment behaviour. The chapters of Part One suggest that the appropriate investment function would be disaggregated enough to reflect the major inter-industry differences in investment behaviour, complex enough to integrate risk and expected returns, and detailed enough to show separately the effects of alternative versions of the major taxation measures. Tax rates (or depreciation rates) which are likely to be altered for stabilization purposes might be included as policy variables, with the more stable features of taxation policy included as structural elements. If the investment process were understood well enough, it should be possible to indicate the probable aggregate effects of innovations in the tax structure as well as of changes in the tax rates.

In conclusion, it is worth repeating the warning that the analysis throughout Part Two has been concerned only with the effects of particular tax policies on the level of capital expenditures. None of the discussion has dealt with the advisability of any of the measures, and it must not be assumed that the measures with the largest and/or quickest effects on investment are therefore the most appropriate tools of economic policy. Throughout this study we have been concerned with the effects of taxation on private, rather than social, rates of return, and have thereby restricted the discussion to the effects of a policy on private investors, ignoring the rationale or lack of rationale for the policy itself.

A discussion of the suitability of particular policies can be based on their ability to perform certain restricted functions—if these functions were described narrowly enough, analysis of the kind in this study might be adequate. But the choice of taxation policies should surely be based on a wider view of their total effects and a more precise and all-embracing description of the goals of tax policy. This would require

more precision and more generality of treatment than has been possible in this study—a more quantitative description of economic relationships and possibilities, and an explicit statement of the relative importance of the various competing ends of taxation policy. With this equipment, an analyst should be able to estimate the appropriateness of tax alternatives. This study has been a minor contribution to the development of a more complete analysis of investment behaviour, which, in turn, is only one part of the total system requiring explanation. There is much to be done.

#### REFERENCES

- 1/ Chapter 4 contains a fuller description of the costs and consequences of altering the timing of various types of investment.
- 2/ These expectations have proved correct, as in the April 26, 1965, Budget Address the Minister of Finance announced his intention to introduce a Bill to provide, in 1967 and subsequent taxation years, a direct grant of 25% of the cost of approved research and development costs. House of Commons Debates, Vol. 110, April 26, 1965, p. 436.
- 3/ Analysis of the statistical **data** is also complicated by the fact that many firms are changing their accounting records so that many outlays on research that were previously charged as general departmental overheads are now classified as research and development expenditures.



## APPENDIX I — METHODOLOGY

This appendix has three sections. The first contains a simple outline of the methods used in preparing this study. The second analyzes in more detail the sources of information, the definition of the various samples of firms, and the conventions which have been employed in presenting the results. The final section deals with the general problems of interpreting information from interviews and mail questionnaires, and with some of the particular characteristics of the data on which this study is based.

### SOURCES OF INFORMATION

This study has drawn on a variety of sources of information in its attempt to clarify the factors influencing investment decisions in large firms. The chief sources have been interviews with officials of 66 of the 70 large firms on which the study is based. The 70 large firms are, with one or two exceptions, all the non-government corporations owning assets in Canada valued (net of accumulated depreciation) at 90 million dollars or more as at December 31st, 1962. The original series of interviews was carried out between June 1962 and June 1963 on behalf of the Royal Commission on Banking and Finance. These interviews with one or more senior officials usually lasted from two to four hours. The first half of the interview was devoted to an analysis of the company's procedures for evaluating investment proposals, and of the various factors which influence investment decisions. The second half of the interview was devoted to an analysis (based on the accompanying questionnaire) of the ways in which changes in credit conditions have affected the firm's decisions.

In the spring of 1963 it was decided that the above evidence, collected on behalf of the Banking Commission, might be useful to the Royal Commission on Taxation in their research programme. Research was then undertaken to supplement the evidence already collected with several detailed case studies of investment behaviour in large firms. To obtain the additional material, the author of this study spent a week or more in each of eight firms in the summer of 1963. During the week in each firm, interviews were held with ten to twenty officials with widely varying duties, and in most cases frequent recourse was had to the firm's detailed records of investment decisions and results. (Accompanying this appendix, as Exhibit C, is a condensed version of the list of questions which were dealt with in one or more of the interviews in each firm.) The eight firms studied in detail were chosen so as to cover all the major industrial groupings and types of ownership, so that to some extent the information obtained in the case studies could be used to make generalizations about larger groups of firms.

The interview data provided the basis for Part One of the study and much of the material for Part Two dealing with the effects of particular taxation measures. Both parts of the study make use of supplementary information from several sources, which are acknowledged at the point in the study where the information is used. Chief among these sources are the mail surveys conducted for the Banking Commission and for the Taxation, published financial statements of individual firms, and Taxation Statistics published by the Dominion Bureau of Statistics. The Banking Commission mail survey of 1700 firms was intended primarily to assess the effects of monetary policy of corporations of all sizes, whether owned by individual shareholders or by governments. Follow-up interviews with 230 firms

with assets below 90 million dollars provided a considerable amount of information on the determinants of investment decisions in smaller firms. This information is used to some extent in Part One of the study and in Chapter 11 dealing with corporate finance. The Taxation Commission's mail questionnaire (a copy of which accompanies this appendix as Exhibit B) was intended to provide, for all large firms and a sample of smaller ones, some idea of the formal procedures used in assessing capital expenditure proposals and some evidence of the effects of several taxation measures. Several tables in Part Two of the study are based on the answers given to the questionnaire, while the information on investment planning was used to corroborate the interview information used in the preparation of Chapter 1. The mail surveys are discussed in more detail on page 274 of this appendix, while the difficulties of interpreting answers to mail questionnaires are considered on page 283.

#### COVERAGE OF THE SURVEYS

This section describes the coverage of the various surveys from which evidence has been drawn for this study.

##### The Royal Commission on Banking's Survey of Large Firms 1/

This survey of all non-financial corporations with assets greater than 90 million dollars (net of accumulated depreciation) as at December 31st, 1961, was based on interviews, examination of financial statements, and correspondence with officials of the firms. The interviews followed more or less the pattern indicated by the questionnaire attached (as Exhibit A) to this appendix. There were 83 firms which were considered as large firms for the purposes of the survey. The group was restricted

to those firms which had a separate existence as corporations with operations in Canada during most of the 1954-62 period covered by the research. Firms which were controlled by other large Canadian corporations were included if their operations had any substantial degree of independence, assuming, of course, that they had assets valued at more than 90 million dollars at the end of 1961. Large Canadian corporations whose operating assets in Canada were less than 90 million dollars were excluded from the group, as was a large oil company purchased by, and amalgamated with, another company during the period covered by the survey. Firms which were started during the period 1954-62 were included if they had assets of 90 million dollars or more by the end of 1961. Provincially or federally owned enterprises were included if they met the size requirements. Privately-owned utilities which were amalgamated with provincially-owned utilities during the period 1954-62 were considered as separate firms for the purposes of the research if they had had an independent existence until 1960 or later. The following table shows the distribution of the 83 firms by industries, and shows the approximate amount of capital expenditures made by them in 1961.

Attempts were made to obtain evidence from all the 83 firms which met the definition described above. Interviews were held with officials of 79 of the firms, and two of the remaining firms were questioned by detailed correspondence. It was not possible to obtain information directly from two of the firms, but in both cases there was some secondary information available from financial statements and from related firms.



TABLE I

<u>Industry</u>	<u>No. of Firms</u>	<u>No. of Firms Owned 50% or More by Other Firms in the Large Firm Group</u>	<u>No. of Firms with Shares Held 50% or More Outside Canada</u>	<u>No. of Government-Owned Firms (as at December 1962)</u>	<u>Approximate Capital Expenditures in 1961 (in Mill. \$)</u>
Primary Metals (steel & aluminium)	6	1	3	0	146
Mining & Smelting (iron, copper, nickel, lead, zinc, uranium, etc.)	7	1	4	0	120
Pulp and Paper	9	0	4	0	107
Utilities (excluding oil & gas pipelines and distribution)	19	0	2	15	1,000
Oil & Gas Pipelines and Distribution	7	0	3	0	116
Petroleum	12	0	10	0	294
Manufacturing and Processing	18	1	10	0	116
Retail Trade	5	2	2	0	26
	<hr/> 83	<hr/> 5	<hr/> 38	<hr/> 15	<hr/> 1,925

Total 1961 capital expenditures by all businesses, corporate and non-corporate, including government-owned enterprises, were 4,800 million dollars. The R.C.B.F. large firm sample covered approximately 40% of this investment, the coverage ranging from less than 7% in retail trade to over 90% in steel and aluminium.

As can be seen from Table I above, the group of large firms studied is responsible for a substantial proportion of the total amount of capital expenditures on plant and equipment. It should be noted that the measure

which is chosen to define a large firm affects the characteristics of the firms included. Our use of assets as a measure of size maximizes the total of assets owned by the firms in the sample. If, on the other hand, the definition had been based on the capital expenditures of the firm over a certain period of years, there would have been more variation in the absolute sizes of the firms in the group (since some firms making extremely large capital expenditures during the last years of the 1954-62 period were not over 90 million dollars by the end of 1961), and fewer utilities with long-lasting assets would have been included. If some measure of sales or turnover had been used as the definition of size, there would have been a number of substitutions of trading or processing firms in place of utilities or manufacturing firms in any size ranking of the largest firms. Since the study is concerned with the determinants of capital expenditures for a ten-year period, it was decided to use the amount of assets, net of accumulated depreciation, as the simplest and best measure of the size of the firm, on the assumption that large capital expenditures over a number of years will in general produce firms with large values of assets. The use of assets as a measure of average capital expenditures over a period of time is misleading to the extent that the length of life of assets varies from firm to firm, and to the extent that the proportion of fixed assets to total assets varies from firm to firm. The Banking Commission survey was concerned with investment in inventories as well as that in fixed assets; the firms in the chosen group of firms were not those with the largest inventories, and so in that sense did not provide as much coverage of inventory investment as could have been obtained had the firms been chosen with that in mind.

The Royal Commission on Banking's Mail Survey

In addition to the survey of large firms described above, the Banking Commission undertook a questionnaire survey of all non-financial corporations with assets over 5 million dollars as at the end of 1961, and of a selected sample of 1065 smaller corporations. The questionnaire used was similar to that attached to this appendix, except that there was no question dealing with the firm's methods of evaluating capital expenditures. Replies were received from approximately 85% of the firms with assets between 5 and 90 million dollars, and from 63% of the sample of smaller firms. Only a few references have been made in this study to the results of the Banking Commission's mail survey, since the mail survey itself did little to explain the investment process in the respondent firms. On the other hand, the follow-up interviews that were held with officials of over 200 of the firms responding to the mail questionnaire provided a considerable amount of information about the ways in which investment decisions are made in those firms and about the reliability of answers to mail questionnaires. The latter point will be considered on page 283 of this appendix. Since this study is concerned primarily with the investment behaviour of large firms, only scant reference has been made to the information available on the procedures and practices of smaller firms. If any reference in the study is made to the investment behaviour of smaller firms, it may be taken to be based on this Banking Commission interview evidence unless some other source is cited.

The Royal Commission on Taxation's Mail Survey

The statistical division of the staff of the Royal Commission on Taxation sent a questionnaire and a request for certain statistical

information in March 1963 to samples of large, medium, and small corporations. The large firm group contained most of the same firms as the large firm group surveyed for the Royal Commission on Banking. The medium size group was of firms with assets between 25 and 90 million dollars, and comprised roughly 25% of the firms in that size group. The small firm sample was a selection of firms with assets below 25 million dollars. The firms were asked to provide certain financial statements for each of several years on an unconsolidated basis. Although some attempts have been made to obtain some statistics on a consolidated basis, most of the statistics compiled to date are on an unconsolidated basis. When corporations have replied separately for themselves and their subsidiaries, the statistics have in general been considered as those of one firm, with the appropriate adjustments being made for consolidation.

The response rate to the Taxation Commission survey varied among size classes and was different for the different types of information requested. For the large firms, there were 66 requests sent out, and some form of information received from 62 of them. On the basis of the information received, several of the firms were reclassified, and for several others there was not enough material available to allow tabulation of statistics. In the final complete statistical analysis of large firms, there are 46 firms represented; while by October 1963, 52 questionnaires (not necessarily from the same firms) had been analyzed. Usable questionnaires were received from 90% of the 43 medium-sized firms addressed, and 58% of the 46 small firms. When reference is made in the study to the Taxation Commission questionnaire responses of large firms, the objects



of the reference are the questionnaires tabulated by October 1963.

The group of large firms differs considerably from that on which the Banking Commission study was based, and also from the group on which this study is based. The chief difference between the Taxation Commission group of firms and the Banking Commission's 83 firms is that the Taxation Commission's group excludes the 15 public utilities owned by the federal or one of the provincial governments. In addition, the Taxation Commission's group excluded several firms whose addresses were not available, or which for some reason could not be contacted. Also included on the Taxation Commission's group were some firms which were reclassified into a smaller size class after their data was received, and one firm which had been removed from the Banking Commission's group because its operations have become amalgamated with those of another of the large firms. Both groups of firms include operating companies with assets over 90 million dollars, even if they are more than 50% owned by another of the large firms, so long as the operations of the two firms are more or less independent. Both groups of firms exclude holding companies and all other corporations whose assets are predominantly financial. The differences between both groups of firms and the 70 firms on which this study is most directly based are described below.

#### The Group of 70 Firms on which this Study is Based

This study is based on a group of 70 large firms which differs from the group of 83 large firms studied by the Banking Commission only in that 15 government-owned utilities have been subtracted, and two firms have been added, on the grounds that their assets net of depreciation were more than 90 million by the end of 1963, although they had been less at the end of 1961. So far as can be told at this date, there are two

other firms whose assets had increased to 90 million or more by the end of 1963, but which have not been included in the large firm group. The accompanying Table II shows the industrial distribution of the differences between the three groups of large firms, and also the distribution of the responders to the Taxation Commission's questionnaire. It also shows the number of firms which the different groups have in common. For most of the purposes for which the Taxation Commission mail questionnaire evidence is used in this study, the differences in the identities of the firms which responded to the questionnaire and those on which this study is based are not important. In cases where the differences assume any great importance, a special note is made.

It can be seen from Table II that the amount of capital expenditures made by the 70 firms on which this study is based is considerably less than the total of 1961 expenditures made by the 83 firms covered in the Banking Commission survey. (The latter total is shown in Table I.) The reason of course is that the 15 government-owned utilities, which are not taxable and are therefore removed from the group of firms considered in this study, make very large capital expenditures. The capital expenditures of the 70 firms, although only 25% of all business and public utility capital expenditures made in 1961, are 40% of the capital expenditures made by all non-government-owned corporations.

The data employed in the analysis in both Parts One and Two of the study of the capital expenditures of the 70 large firms include reports on the Banking Commission interviews with 66 of the firms, completed Taxation Commission questionnaires for 52 of the firms, and an intensive series of interviews and a detailed examination of the records of eight of the firms.

TABLE II

(1)	(2)	(3) No. of Large Firms for Which Cash Flow Statistics Have Been Prepared on Basis of Data Submitted to Taxation Commission	(4) No. of Large Firms for Which Taxation Commission Questionnaires were analyzed	(5) No. of Firms in the Group of 70 Firms on Which this Study is Based	(6) Other Firms Over 90 Mill. at End 1963, not In- cluded in Group of 70 Firms	(7) */ No. of Firms in Common in the Groups in Columns 3 & 5	(8) */ No. of Firms in Common in the Groups in Columns 4 and 5	(9) Approximate 1961 Capital Expenditures of the 70 Firms of Column 5 (in millions of dollars)
Industry	No. of Firms in Banking Commission Group							
Primary Metals (steel & aluminium)	6	5	4	6		5	4	146
Mining & Smelting (iron, copper, nickel, lead, zinc, uranium)	7	6	9	7	2	5	6	120
Pulp & Paper	9	4	6	9		4	6	108
Utilities	19	4	4	4		4	4	350
Gas & Oil Pipelines & Distribution	7	2	6	7		2	6	116
Petroleum	12	7	8	12		6	7	294
Manufacturing & Processing	18	11	15	20		11	13	121
Retail trade	5	0	0	5		0	0	26
	83	39	52	70	2	37	46	\$1,280 million

\*/ These are the numbers of firms which are in both the Taxation Commission's large firm group and the group of firms on which this study is based. It is an underestimate of the amount of statistical and questionnaire data for the 70 firms on which this study is based, since several of the 70 firms have been included in the Taxation Commission's medium-sized group for the purposes of analyzing the material submitted by mail. The numbers are smaller in column (3) than in column (4) because complete statistics were not available for all of the firms submitting questionnaires. The firms in column (3) are the ones whose sources of finance are analyzed in Table I of Chapter 5.

The eight firms chosen for case studies were picked so as to represent the major industrial groupings, foreign and domestic ownership, decentralized and centralized management, different rates of growth, and different types of budget procedures. The sample could be carefully chosen, since the interviewer already had a considerable amount of information about each of the 70 firms. One obvious bias in the selection procedure should be mentioned. In the Banking Commission survey there were considerable differences among firms in their willingness to discuss, in a detailed way, matters which are usually considered highly confidential. The differences should not be exaggerated, as all but one of the firms approached directly by the Banking Commission granted an interview, and the large majority of the officials interviewed were co-operative and forthcoming. Nevertheless, the eight firms approached on behalf of the Taxation Commission were all among those firms which had been most helpful in the course of the Banking Commission enquiry. All of the eight firms initially chosen agreed to co-operate, and subsequently were all generous with the time of their officials, and provided, almost without exception, unrestricted access to the relevant records. To the extent that the eight firms are not representative of the rest of the 70 firms, the material derived from the case studies is potentially misleading. Attempts have been made throughout the study to avoid making generalizations on the basis of the case studies where there is a danger that the differences are material between their behaviour and that of the other firms in the group of seventy.

The research on each of the eight firms usually commenced with a detailed examination of the statistical material submitted by the firm to the Taxation Commission and a review of all the firm's published



financial statements for the past decade. At the first interview, usually with a senior financial official, the scope of the study would be outlined and tentative arrangements would be made to see executives in various departments. In all the firms it was possible to interview the president, one or more other members of the board of directors, the senior financial officials, and a whole range of officials of varying seniority concerned with production, engineering, marketing, research and development, planning, accounting, and taxation. In those firms with some degree of decentralized management, considerable emphasis was placed on the interviews of divisional officials, and attempts were made to analyze in detail the relationships between the various divisions and the central management. Attached to this appendix (as Exhibit C) is a summary of the topics that were covered at one or more of the interviews in each of the firms. In these case studies, special efforts were made to assess how the attitudes and actions of each official responsible for some portion of the investment process affected the over-all capital expenditure programme. Since the organization, both formal and informal, of the process of making capital expenditure decisions varies greatly from firm to firm, it was not possible to employ a set list of questions which could be answered by a man holding a certain job. It was thought best that there should be no formal structure to individual interviews and that as many different officials as possible be interviewed. A limit to the application of this principle was set by the large number of questions which had to be dealt with in each interview, and by the fact that it was usually necessary that each interview be an hour or more in length to ensure that a certain conversational ease could be achieved. Almost without exception the officials interviewed were most helpful,

and it cannot be emphasized enough that without the outstanding degree of co-operation that was demonstrated by all the participating firms, this study would not have been possible. As might be expected, some officials were initially suspicious; to many the purpose and method of the study required a considerable amount of explanation. In general, however, it was surprisingly easy to establish common ground and to proceed quickly to the more important questions.

One of the chief advantages of having several interviews in each of a number of firms is that the points of view of the various functional officials, and of officials of varying degrees of seniority, could be compared and some assessment made of the relative importance of the several aspects of the capital expenditure decisions. In this respect the analysis of the investment behaviour of the eight firms interviewed in great detail was substantially better than that based on the Banking Commission interviews. The Banking Commission interviews usually involved more than one official, but often did not involve more than one interview with each firm, so that there was more scope for the subjective interpretations of the officials interviewed to have a significant but immeasurable influence on the evidence obtained. It was possible to examine statistics showing what financing and spending the firm had actually done, and to use the data in conjunction with interview evidence, but the accuracy of this sort of analysis was almost certainly less than was obtained in the case studies. One of the further advantages of the case studies was that they often brought to light facts which made it easier to interpret the interview evidence obtained earlier from the firms in the Banking Commission group.

During the week spent in each of the case study firms, a considerable amount of time was spent going over the firm's files relating to planning and capital expenditures. It was thus possible to assess, for at least the projects of a sample period, the amount and nature of the information which was required to justify capital expenditures. Conversations with the staff members responsible for the preparation and administration of capital expenditure proposals often disclosed valuable information, but the actual records themselves were usually of key importance. Chapter Two contains much of this information.

### Presentation of Examples in the Study

All the examples are preceded by an asterisk (\*) so that they may be easily distinguished. There are four different sorts of examples:

#### DIRECT QUOTATIONS FROM INTERVIEWS

Quotation marks are used to indicate the passages in which the official is being quoted directly. With the exception of minor changes in word order or terminology to preserve anonymity, the pieces within quotation marks are intended to be accurate reports of statements by the officials quoted. The sources of these quotations are either the extensive rough notes taken at each interview in 1962 and 1963, or the tape recordings made at a large number of the 1963 interviews.

#### INDIRECT QUOTATIONS

Many of the examples in the study are based on material found in corporate records, or on information derived from the series of interviews. Quotation marks do not appear in this kind of example, although, of course, every effort has been made to describe the particular events and procedures as accurately as possible.

### DIRECT OR INDIRECT QUOTATIONS FROM THE TAXATION COMMISSION'S MAIL QUESTIONNAIRE

The study contains no direct or indirect quotations from responses to the Banking Commission questionnaire, but does contain several from the Taxation Commission's mail survey. All the quotations are from the responses of large firms, and are designated as being quotations from the mail survey. Since follow-up interviews were not undertaken with the respondents to the mail questionnaires of the Taxation Commission, the comments quoted from them must be interpreted with caution.

### HYPOTHETICAL EXAMPLES

In several of the chapters of Part Two there are calculations made of the effects of certain tax measures on example projects. In all cases it should be clear when the calculations are hypothetical. In all instances the figures chosen to represent sample projects are intended to be similar to those involved in a number of the actual capital expenditures examined, although in most cases there are no precise estimates made of the generality of different types of project. In some cases the data used in the calculation of the effects of tax measures are drawn from corporate files of projects actually undertaken. Where the data are based on specific actual projects a note to that effect has been included.

### THE INTERPRETATION OF EVIDENCE FROM INTERVIEWS AND MAIL SURVEYS

Survey and interview studies rely primarily upon explanations of behaviour offered by those who have been directly involved. Since explanations by participants are frequently rationalizations as much as descriptions, they do not provide a complete analysis of the event concerned.



The more emotionally involved a person is in a decision he is attempting to describe, and the further the event is in the past, the less likely is the description to be reliable.

Even if a complete subjective analysis by the decision-maker of the essential elements of his decisions provided a balanced explanation of his behaviour, there would still be major difficulties in getting such an explanation by using interview or survey techniques. There are a number of inevitable but immeasurable biases involved in the use of these techniques, and there has been only a limited amount of theoretical and empirical work attempting to assess their importance.

Mail questionnaires and interviews both are potential sources of misinformation, although for slightly different reasons. The prime dangers with mail questionnaires are that they will be answered unreflectively by someone not prepared to analyze fully the background information, that the responder might not understand the intent of the question, or, if the questionnaire is complete enough to provide adequate cross-checks, that too many firms will fail to respond. With interviews, given an interviewer who understands well the field of questioning, there is less risk that the questions will be misunderstood, but a related danger arises that the pattern of questioning will be such as to lead the respondent to give answers he thinks will satisfy the questioner. Even with a given set of answers, different interviewers might make different interpretations, and come to quite different conclusions about the relative importance of the answers received.

Both methods give rise to difficulties in the interpretation of answers received, and from either it is often difficult to derive informa-

tion which can be aggregated to make general conclusions. These difficulties counsel cautious and skeptical use of interview and survey techniques. But even though decision-makers are unlikely to be able to produce a balanced assessment of their own motivation, they are nevertheless able to provide much direct evidence which could not be obtained from other sources. The best use can be made of this information if there are also available statistical records which can be used in support of hypotheses established on the basis of evidence received directly from decision-makers.

A general analysis of the difficulties involved in using interview and survey evidence may be found elsewhere, and therefore need not be presented here. 2/ The remainder of this appendix will deal with a number of the possible biases that might affect the specific evidence on which this study is based.

#### Selection of Individuals to be Interviewed

The Banking Commission (hereinafter R.C.B.F.) interviews included the treasurer or financial vice-president in 57 of the 66 firms interviewed (the 15 government-owned utilities are ignored for the purposes of this analysis). In four of the other nine firms the interview was with one or a group of more junior financial officials, while in the remaining five firms the persons interviewed were very senior non-financial executives. In 27 of the 57 interviews, the senior financial executive was alone in the interview, while in the other 30 firms he was accompanied by other executives, sometimes the president but more often one or more less senior financial executives. It cannot be assumed that the process

of making investment decisions would be described in the same way by financial and non-financial executives, so that the heavy weighting of financial executives among the officials interviewed raises some difficulties. For one thing, it was often clear that the financial officials interviewed were not familiar with the mechanics of the investment process, and were not able to give detailed descriptions of either the formal procedures or the factors which had entered into particular decisions.

Interpretation was easier in the firms where the officials were closely involved in capital expenditure decisions, since the examples and data they were able to provide could be related to the more general questionnaire answers and to information in financial statements. But from the Taxation Commission case studies it was clear that financial executives often view capital expenditures in a different light than do other officials, and in some of the R.C.B.F. firms the extent of the difference could not be reliably estimated.

In the Taxation Commission case studies it was relatively easy to avoid this potential source of bias, as there were enough interviews in each firm with persons in different departments that departmental differences in approach could be fairly easily assessed. There was often seen to be a similar difference in the points of view of officials at higher and lower levels of authority. (See Chapter 1, pp. 27-31, for a discussion of both types of difference.) Both types of difference were glossed over in the R.C.B.F. survey, since there was in general only one interview in each firm, in which differences in approach between the officials interviewed would not be likely to appear clearly.

Interviewer Bias

This problem is one which has received a considerable amount of attention in methodological literature, 3/ but usually in connection with research projects involving a number of interviewers obtaining answers to a common set of questions. To a certain extent this pattern of interview was followed in the R.C.B.F. survey, where attempts were made to follow the questionnaire (attached as Exhibit A) quite closely. The possibility of questions and answers being asked and interpreted differently by different interviewers was lessened by the small size of the interviewing staff. The author of this study was present at 64 of the 66 R.C.B.F. large firm interviews and was therefore able to achieve a fairly consistent pattern of questioning. Five other interviewers took part in from one to thirty large firm interviews each. The participation of a number of different people in the interview programme, in addition to the presence of one staff member at all the interviews, provided some consistency of interpretation as well as some checks on the biases of individual interviewers. In the R.C.B.F. study this control of interviewer bias and emphasis on consistent interpretation of evidence was essential, as the major aim of the study was to produce quantitative estimates of the effects of changes in credit conditions on the capital expenditures of the firms interviewed.

The intensive case studies for the Taxation Commission obviously could not be organized in the same way, as a detailed knowledge of the behaviour of the chosen firms was not to be gained from a formal pattern of questioning. But although the series of interviews for each case study was more comprehensive than any more formal series of interviews



could have been, this extra information had to be transcribed and interpreted by a single interviewer. Therefore the cross-checks on interviewer bias which were available in the R.C.B.F. interviews were absent in the case studies. There is no doubt at all that the information obtained and, even more so, that presented in this study, reflects the author's presumptions about the investment process. Efforts have been made to provide as much evidence as possible in the form of direct quotations to give readers the maximum amount of source material, but there can be no pretence that the questions asked and the way the answers have been edited have not been affected by the author's own experiences and attitudes.

#### Attitudes of Respondents

Although the research of a Royal Commission appears to gain quite easily the co-operation of business firms and individuals, there is an attendant danger that the semi-official nature of the research will influence the answers given to certain questions. There are some reasons why any interview situation creates these problems, and other reasons why the subject of this study is a particularly difficult one.

#### ATTEMPTING TO PLEASE

In situations where the respondent is not exactly sure what the purpose of the interview is, and may not be fully conversant with either the subject matter or the terminology employed, there is a tendency for the answers to reflect what the respondent thinks the questioner wants to hear. If there is one pattern of conduct which the respondent thinks is "approved", then there is a natural tendency for him to interpret the

firm's behaviour in a way that makes it consistent with the "approved" behaviour. This tendency was often seen to affect the answers to questions about the firm's use of formal investment criteria.

#### CONSISTENCY

If officials know that the research will include interviews with a number of other officials, junior and senior to themselves, they will on occasion attempt to make their own replies consistent with the answers which they think the other officials will give or have given. Thus some of the benefits of a series of interviews with officials of differing responsibility may be dissipated, although a large enough series of interviews should provide adequate cross-checks on this kind of bias.

#### SENSITIVITY OF THE SUBJECT AREA

Where the respondent anticipates only a slight connection between the information he is providing and government policies affecting his firm it is considerably easier to obtain objective information about the firm's experiences. For example, the effects of government fiscal policies are so much more obvious to corporate officials than are the market operations of the central bank that it is often much easier to get objective information about the effects of monetary policy than about the effects of taxation. Very few of the officials interviewed had strong views about the wisdom or efficacy of monetary policy, and many were even unsure of the relationship between monetary policy and conditions in financial markets. About the effects of taxation there were seldom such doubts, so that descriptions of particular events or decisions sometimes led to pronouncements about the general weight and maladministration of taxes. Such remarks were, of course, valuable for what they revealed

of executive attitudes, but on occasion these attitudes had considerable influence on the selection of factual examples. Sometimes it was clear that an argument was being presented for a general reform of taxation, but in most of these cases it was not possible to get behind the general statement to the effects of specific taxes on the firm itself. These situations may have arisen because it was not always clear to officials that the purpose of the study was to analyze investment behaviour rather than make or transmit specific proposals for altering the tax structure.

#### Method of Recording Information

The R.C.B.F. interviews were transcribed by means of full notes which were then recorded on tape after the interview and then typed out for further study. The same procedure was followed for some of the Taxation Commission case study interviews, while for many others a direct tape recording was made of the interview. The effects of the method of transcribing material were often tested by deliberately not taking notes during certain sections of the interview, and always making sure that the tape recorder was not recording continuously throughout an interview. The effects of the recording of information varied greatly among firms and among individuals. In some cases the officials ignored the fact that notes were being taken, or the conversation transcribed, but in general there was a feeling that the more literal the transcription that was being made the more restrained was the interview. In some cases the influence was too obvious to ignore: one or two officials did not wish a recorder to be used, and several others were definitely uncomfortable. One official found himself unable to converse at all naturally with the recorder on, while several others requested that it be turned off while a particularly confidential matter was being discussed. Pre-

sumably there were subjects not brought up by officials during recorded interviews which might have been considered in less formal surroundings.

Although some officials expressed a preference for recorded interviews, it was in general true that the conversation was more relaxed when the tape recorder was not in use.

In all the case study firms there was at least one person with whom a closer relationship was established, so that the reactions of other officials to the patterns of questions and methods of transcription could be discovered and passed on. This additional source of information about the influence of the interviews was a useful check on the interviewer's own judgment made at the time of the interview.

#### The Availability and Use of Financial Records

In most of the R.C.B.F. and Taxation Commission firms some attempt was made to obtain examples of the kinds of evidence used in supporting capital expenditure proposals and assessing their results. In the Taxation Commission case study firms further attempts were made to collect material demonstrating the processes of cost and revenue estimation for large groups of projects (Tables I and II in Chapter 2). This data was of immense assistance in interpreting the interview information, but it should not be considered representative of the kind of financial estimates and records prepared by most firms. For one thing, the information was only available for some cases, and these firms are not likely to be typical of all firms. Where financial statistics dealing with capital expenditures were not made available, it may have been because systematic records of estimated and actual rates of return are not kept, because the



actual records differ from those which are supposed to exist, or because the records were not easily available in a presentable form. As mentioned in several places ~~in the~~ study, the processes of decision-making and the accuracy of predictions differ considerably according to the kinds of records that are kept. Thus the statistics for the firms whose records were made available are not likely to be representative of the behaviour of the firms which do not keep the same kinds of records. Care must therefore be taken in drawing conclusions from such a sample of data.

#### Interpretation of Responses to Mail Questionnaires

The best evidence of the difficulties of mail surveys is provided by the R.C.B.F. experience. More than 200 follow-up interviews were held with corporate officials (of firms with assets less than 90 million dollars) who had previously completed and returned copies of the R.C.B.F. mail questionnaire. It was found that in a substantial number of cases the questionnaire had been filled in hastily by someone with an imperfect knowledge of the subject matter of the questions. In many cases a comment was made during the follow-up interview to the effect that "If we had known that these questionnaires were going to be taken seriously, we would have been more careful in our answers." The appearance of misleading or mistaken answers appeared to be related to the kinds of question being asked, the extent of cross-checking, and the identity of the respondents.

The possibilities for misleading answers to the capital budgeting questions on the Taxation Commission's questionnaire were quite large, and the cross-checking of the questionnaire responses to the R.C.B.F.

data on the 70 largest firms indicates that the greatest care must be used in the interpretation of answers. In firms where even the officials directly concerned are not able to say exactly which types and what fraction of expenditures are subject to rate of return calculations, it is not surprising that a mail questionnaire asking similar questions of an unknown respondent does not produce any better answers. In fact, of course, the mail questionnaire answers are likely to be far worse than interview answers in any case, since without follow-up interviews there is often no way of telling whether a particular answer was offered merely to fill up a blank space. In an interview it can be established quickly whether a particular answer is consistent with other answers and, in general, with the facts, and it is also easier to tell when a respondent is guessing.

After extensive follow-up interviews of almost all respondents who suggested that monetary policy had affected their actions (and many who said it had not) the staff members of the R.C.B.F. were able to have a little confidence in their estimates of the effects of monetary policy. Without such a programme of follow-up interviews, based on a more extensive questionnaire, the responses to the Taxation Commission's mail survey must be treated very cautiously indeed.

## REFERENCES

- 1/ The Report of the R.C.B.F. mail and interview surveys, The Effects of Monetary Policy on Corporations, has been published as an appendix volume issued subsequent to the main Report of the Commission, in 1965, p. 305.
- 2/ See C.A. Moser, "Interview Bias", Review of the International Statistical Institute, Vol. 19, No. 1, 1951, pp. 28-40; "The Function of Survey Research in Economics", in Komarovsky, George Katora, ed., Common Frontiers of the Social Sciences, Glencoe, Ill., Free Press, 1957, pp. 358-375; Herbert Hyman, "Interviewing as a Scientific Procedure" in Lerner and Lasswell, eds., The Policy Sciences, Stanford University Press, Stanford, 1951, pp. 203-217; Herbert Hyman, Interviewing in Social Research, The University of Chicago Press, Chicago, 1954; and C. Scott, "Research on Mail Surveys", Journal of the Royal Statistical Society, Series A, Vol. 124, Part 2, 1961, pp. 143-195.
- 3/ See references in Herbert Hyman, ed., Interviewing in Social Research, The University of Chicago Press, Chicago, 1954.

EXHIBIT AQUESTIONNAIRE USED AS A BASIS FOR THER.C.B.F. LARGE FIRM INTERVIEWSROYAL COMMISSION ON BANKING AND FINANCE .

Date.....

Date of financial year-end.....

Name of Firm: .....

Address: .....

Type of Operation: .....

Number of employees: .....

Approx. value of sales for the financial year ending in 1961: .....

Approx. value of total assets at year-end 1961: .....

Approx. depreciation expense for financial year ending in 1961: .....

Approx. capital expenditures for financial year ending in 1961: .....

Name and position of Company official completing the questionnaire: .....

.....

The purpose of this questionnaire is to aid the Commission in assessing the role of borrowed funds in financing Canadian industry, and estimating the effects of changes in credit conditions upon the capital expenditures and financing policies of firms of various types and sizes. If any of the following questions do not apply to the operations of your firm, please put N.A. (Not Applicable) in the answer space, explaining if you wish the reason why the question is inappropriate. The answers given to the questions will be treated as confidential.

1. When considering whether or not to make new capital expenditures, most firms require that a project promise a particular rate of return or payback period or perhaps use different standards for different types of capital expenditures.
  - (a) If you employ any such standards, please state them as explicitly as possible, and the types of projects to which they apply.
  - (b) Have you changed any of your standards since 1950? If so, please give the dates and your reasons for making the changes.



2. In 1956-57, 1959-60, and in mid-1962 funds became less available in Canada and interest rates increased. Were changes in the availability or cost of credit in whole or in part responsible for leading your firm to:

	1956-57		1959-60		1962	
	Yes	No	Yes	No	Yes	No
(a) Change your sources of finance?						
In particular, were you led to:						
(i) Go outside Canada for funds?	—	—	—	—	—	—
(ii) Initiate or increase the use of sale and leaseback financing?	—	—	—	—	—	—
(iii) Decide to issue share capital rather than bonds or other fixed interest obligations?	—	—	—	—	—	—
(iv) Find new lenders (another bank, trust companies, etc.) for financing of a type already employed?	—	—	—	—	—	—
(v) Obtain more trade credit from your suppliers?	—	—	—	—	—	—
(vi) Obtain more or larger advances from customer?	—	—	—	—	—	—
(vii) Make other changes?	—	—	—	—	—	—
(Specify if possible)						
(b) Increase the internal flow of cash available for expenditures?						
In particular, did you:						
(i) Restrict the granting of trade credit to customers?	—	—	—	—	—	—
(ii) Restrict the payment of dividends?	—	—	—	—	—	—
(c) Extend financial aid to other firms?						
In particular, did you:						
(i) Allow some customers to have more credit than usual?	—	—	—	—	—	—
(ii) Make extra advances to suppliers?	—	—	—	—	—	—
(iii) Increase the size of advances to subsidiary or associated companies?	—	—	—	—	—	—
(d) Deliberately reduce the size of your raw materials, work-in-process, or finished goods inventories?	—	—	—	—	—	—
(e) Postpone any capital expenditures?	—	—	—	—	—	—
If so, please indicate the amounts involved, the nature of the projects, and the number of months of postponement.						
(f) Abandon plans for capital expenditures?	—	—	—	—	—	—
If so, please indicate the amounts involved and the nature of the projects abandoned.						

3. If increases in the cost of external funds or restrictions on their availability have not led you to decrease your planned capital expenditures, is this because: (please check)

(a) Your firm relies only on internal sources of finance or advances from associated companies? ( )

(b) The increases in the cost of funds or restrictions on amounts available were not great enough to affect your planning of capital expenditures? ( )

(c) You were committed to expenditure programmes already under way? ( )

(d) Your firm was not planning or making capital expenditures during the periods of credit restriction? ( )

(e) Of other reasons (please specify) ( )

4. If past increases in the cost of funds have not been great enough to decrease your planned capital expenditures (answer (b) above), would you indicate below, if possible, how large an increase in the cost of funds would have to occur before the size or timing of your capital expenditures would be affected?

5. In 1961 and early 1962 funds became more available and interest rates decreased in Canada. Were these changes in the availability or cost of credit in whole or in part responsible for leading your firm to:

(a) Change your sources of external finance? Yes\_\_\_\_ No\_\_\_\_  
If so, please indicate briefly below the nature of whatever changes were made.

(b) Accelerate your capital expenditure programme? Yes\_\_\_\_ No\_\_\_\_  
If so, please indicate the amounts involved, the nature of the projects, and the number of months the projects were brought forward.

(c) Implement new plans to purchase capital assets? Yes\_\_\_\_ No\_\_\_\_  
If so, please indicate the size and nature of the new projects.

6. If decreases in the cost of external funds or increases in the amount of funds available have not led you to increase your planned capital expenditures, is this because: (please check)
- (a) Your firm relies only on internal sources of finance or advances from associated companies? ( )
- (b) The decreases in the cost of funds, or the increases in the amounts available, were not great enough to affect your planning of capital expenditures? ( )
- (c) There were no additional capital expenditures available which would promise a satisfactory rate of return, however low the cost of external funds? ( )
- (d) Of other reasons? (please specify) ( )
7. If past decreases in the cost of funds have not been great enough to increase your planned capital expenditures (answer (b) above), would you indicate below, if possible, how large a decrease in the cost of funds would have to occur before the size or timing of your capital expenditures would be affected?
8. (a) How large is your present line of bank credit?
- (b) Please indicate the changes in this line of credit since 1954.
9. (a) Combined total of share capital and retained earnings at the end of the financial year 1961: .....
- (b) Total of bonds and debentures outstanding at the end of the financial year 1961: .....

## 10. Sources of funds during the period 1955-62.

	<u>Years in which the source was used</u>	<u>Approximate amounts</u>	<u>Effective interest rate</u>
(a) Share capital issued:			N.A.
(b) Bonds or debentures issued:			
(c) Term loans			
(i) From chartered banks			
(ii) From other institutions (Specify)			
(d) Bank loans (non-term)			
(e) Commercial paper			
(f) Other non-bank short term borrowing			

11. It may be the case that your firm has since 1950 been affected by the cost or availability of credit during some year or years other than those mentioned above, or has been affected during the years mentioned in a way not brought out by the specific questions which have been asked. If so, please indicate the date or dates when your actions or plans were affected, the extent to which your spending or financing plans were altered, and any other relevant details.

12. The Commission is interested in obtaining information on the decisions made by participants in the foreign exchange market. Please describe briefly the practices you follow as a buyer or seller of foreign currencies.



EXHIBIT BROYAL COMMISSION ON TAXATIONSURVEY OF CORPORATIONSQ U E S T I O N N A I R E1. Taxation and Capital Expenditures

1. In deciding to undertake a major capital expenditure, does your company consider:

(a) a calculation of the expected rate of return:

yes ..... no.....

(b) a calculation of pay-back period:

yes ..... no .....

(c) If calculations such as those indicated under (a) and (b) are sometimes made, please attach typical examples, with particular attention to the role of taxes. What proportion of your capital expenditures are assessed in this way?

(d) Does your company use a target rate of return (or minimum pay-back period) in deciding whether to proceed with particular projects:

yes ..... no .....

If yes, please specify the target (if you use more than one target please indicate which kinds of capital expenditures are judged in terms of each target).

(e) Are some projects undertaken on which the expected rate of return is below the acceptable range?

yes ..... no .....

If yes, what proportion of your capital expenditures would be on projects which did not meet rate of return or pay-back test?

- (f) Are some projects not undertaken even though the expected rate of return is above the acceptable range?

yes ..... no .....

If yes, what proportion (by value) of the projects considered are of this type?

What would be the usual reasons for not proceeding?

2. Many firms now subject each proposed major capital expenditure to a review by its tax department or by a tax consultant. Does your firm conduct such a "tax review"?

yes ..... no .....

3. If such a tax review is conducted does it usually show that the manner of proceeding with the project will significantly affect expected tax liabilities?

yes ..... no .....

## II. Tax Incentives

- A. Accelerated depreciation for production of products new to Canada or new to a surplus manpower area (Under Regulation 1108 introduced in 1961).

1. What has been the total tax deferment of your company under this provision up to the end of your 1962 fiscal year? .....

2. Approximately what percentage has this tax deferment been to the taxable income of your company for the same period? .....

3. Was the above deferment (if any) the result of a planned change in the activities of the firm designed to take advantage of the provision? yes..... no .....

4. If your firm did not change its activities in order to take advantage of the provision, please explain why such a change was not instituted.

5. Do you agree with the objective of the provision?

yes ..... no .....

If no, why?

If you agree with the objective do you believe it could be achieved more effectively in some other manner?

yes..... no .....

If yes, please specify what, in your opinion would be a more effective method (please consider other forms of the same provision, other tax methods and methods unrelated to taxation).

B. Accelerated depreciation for re-equipment and modernization

(Under Regulation 1109 introduced June 21, 1961).

1. What has been the total tax deferment of your company under this provision up to the end of your 1962 fiscal year?.....

2. Approximately what percentage has this tax deferment been to the taxable income of your company for the same period? .....

3. Was the above deferment (if any) the result of a planned change in the activities of the firm designed to take advantage of the provision? yes..... no .....

4. If your firm did not change its activities in order to take advantage of the provision, please explain why such a change was not instituted.

5. Do you agree with the objective of the provision?

yes..... no .....

If no, why?

If you agree with the objective do you believe it could be achieved more effectively in some other manner?.....

yes ..... no .....

If yes, please specify what, in your opinion, would be a more effective method (please consider other forms of the same provision, other tax methods and methods unrelated to taxation).

C. Production (or sales) incentive (Under Section 40A introduced April 1, 1962).

1. What has been the total tax saving to your company under this section for your 1962 fiscal year?.....
2. Approximately what percentage did this saving bear to taxable income for the portion of the year after April 1, 1962? .....
3. Was the above saving (if any) the result of a planned change in the activities of the firm designed to take advantage of the provision?  
yes ..... no .....
4. If your firm did not change its activities in order to take advantage of the provision, please explain why such a change was not instituted.



5. Do you agree with the objective of the provision?

yes ..... no .....

If no, why?

If you agree with the objective do you believe it could be achieved more effectively in some other manner?

yes ..... no .....

If yes, please specify what, in your opinion, would be a more effective method (please consider other forms of the same provision, other tax methods and methods unrelated to taxation).

D. Additional deduction for scientific research (Under Section 72A introduced in 1962).

1. What has been the total tax saving to your company under this section for your 1962 fiscal year? .....
2. Approximately what percentage did this saving bear to taxable income for the portion of the year after April 1, 1962?
3. Was the above saving (if any) the result of a planned change in the activities of the firm designed to take advantage of the provision?  
yes ..... no .....
4. If your firm did not change its activities in order to take advantage of the provision, please explain why such a change was not instituted.

5. Do you agree with the objective of the provision?

yes ..... no .....

If no, why?

If you agree with the objective do you believe it could be achieved more effectively in some other manner?

yes ..... no .....

If yes, please specify what, in your opinion, would be a more effective method (please consider other forms of the same provision, other tax methods and methods unrelated to taxation).

E. Employee Stock Options.

1. What has been the total number of shares exercised under stock options for the past 7 years?.....

2. What is (a) the total number?

(b) the total dollar value at present market of shares presently subject to stock options?

(a) ..... (b) .....

3. Do you consider employee stock options an important factor in obtaining and retaining the services of key employees?

yes ..... no .....

EXHIBIT C

## OUTLINE OF TOPICS CONSIDERED IN CASE STUDIES

The following list of questions was prepared before the start of interviews for the Taxation Commission case studies. It was used as an outline of the subjects to be discussed rather than as a source of particular questions. No single official was expected to provide information over the whole range of topics, although, where possible, several points of view were sought concerning each of the subject areas. Officials in specialist departments were asked some general questions as well as the more detailed questions about the scope and nature of decision-making within their departments, and about their relationships with other departments.

I. Market estimates

1. What determines the range of products? (Possible limits to diversification.)
2. What determines the geographical extent of markets?
3. What are the limitations on the firm's market share in any market area?
4. What approval do proposals concerning new products or markets have to receive before detailed market estimates are made?
5. What is the basis of price estimates for
  - (a) new products?
  - (b) established products in present market areas?
  - (c) established products in new market areas?
  - (d) products selling in export markets?
6. What explanation is given of the various changes which have taken place in the prices of the firm's products in the past few years? Are any rules of thumb used in pricing decisions? Under what circumstances are the rules ignored?
7. Are the profit consequences of alternative prices explicitly considered? If not, is it because the firm does not consider itself to have any pricing freedom? Or because the volume consequences of price shifts cannot be estimated?
8. What confidence is placed in the price and volume estimates made? How accurate have they been in the past?
9. Do the estimating errors differ greatly among classes of products?
10. Have there been any noticeable changes in the accuracy of price and revenue estimates?

## II. Cost Estimates

### A. For cost reduction or replacement expenditures:

1. Who makes the cost estimates, and what type of verification (before and after the event) are estimates subject to?
2. Are the personnel who cost the expenditure proposals the same as those who initiate and support the projects? What evidence is there that cost estimates are adjustable to ensure that they meet the required rate of return or payback standard? (An examination in detail of post audit procedures is essential if direct questions about these are to be asked.)
3. What margin of error is thought to exist in these estimates?
4. Assuming that there are no direct revenue consequences of the expenditure, are the anticipated cost savings required to meet any precise rate of return or payback standards?
5. If replacement expenditures are approved for "quality improvement" rather than cost saving reasons, what measures are made of the competitive importance of the particular improvement in quality?
6. What is the source of these expenditure proposals? Is there a flow from below which is controlled by application of budget controls or rate of return standards at a higher level? Do those making proposals from below know of the standards which their projects are required to meet? Do they apply standards at their level which equal or exceed in stringency the standards applied at a higher level?
7. Is there a staff department whose function is to develop new or improved production methods requiring capital expenditures? If so, how do their activities tie in with those of the operating departments, and what are the resultant effects on the number and nature of suggested changes?
8. Is there an over-all policy linking the short or long run volume of replacement expenditures to any other variable? Are differential standards applied depending on the volume of such expenditures already approved for the given period?
9. Where are the decisions made regarding the amount and nature of replacement expenditures? Are departments given budgets which they are relatively free to allocate as they wish? If so, what measures are used to ensure that the funds are put to equally good use in the several departments? Analyze differences between apparent and effective control.

### B. For expenditures involving expansion into new products or market areas:

1. Of what importance are the costs of existing products in the estimation of the costs of new products? Are uncertainties of cost estimation in part responsible for setting limits to the extent of diversification?
2. Is there a relationship between the reliability of cost estimation and the reliance which is placed on such estimates? If so, is the relationship evidenced by differing rates of return standards for projects whose costs can be more or less easily estimated?



3. As with cost reduction expenditures, examine the procedures for cost estimation, and assess the possibility that the estimates can be tailored to make a project promise the required return.
  4. Where the expansion is "necessary to meet competitive pressures," are the cost estimation procedures any different than in cases where the expenditures are justified solely by their own anticipated profitability?
- C. For other capital expenditures - included in this residual group may be employee welfare expenditures, some quality improvement expenditure, research and development, and some replacement expenditures:
1. If the revenue consequences of the expenditure are not or cannot be made explicit, what importance is attached to any cost estimates which are made?
  2. Where do proposals for such projects originate, and what limitations are there on the number to be undertaken in any particular budget period?
  3. At what decision-making level are such expenditures likely to be subject to budgetary pressures?
  4. Are there any established policies setting the amount of such expenditures to be made by any particular division or by the firm as a whole?

It should be possible to establish the way in which various existing taxes work into cost estimates. It will be less easy, in cases where certain taxes are not now explicitly considered, to judge what effects changes in various tax provisions would have on the methods and results of cost estimation.

### III. The Role of Finance

1. Is there a policy relating all or any particular type of capital expenditure to all or some part of internally generated funds?
2. Is there a disinclination to use external funds? If so, how strong is it and how is it evidenced?
3. Are steps taken to obtain necessary financing before the expenditure decisions are made? How do conditions in financial markets enter the decision?
4. What computations are made of the cost of capital? How frequently? How is the cost of capital figure used when expenditure decisions are made?
5. What is the relative importance of earnings, cash flow, and planned expenditures on the level of current dividends? How flexible is the dividend policy?
6. Review effects of changes in conditions in financial markets on the planning of capital expenditures.

#### IV. Assessment Procedures

1. Examine in detail the techniques presently employed, measuring as accurately as possible the levels of achieved return for various types of project as well as the variance between achieved and anticipated return.
2. Where do the procedures become operative, i.e. who is responsible for applying the screening process? Are these officials also free to make adjustments in estimates? Who bears the responsibility for discrepancies between anticipated and achieved returns? What happens to projects which fail to meet the tests? How many of them are there?
3. At what level do "judgment factors" enter the decision-making process in support of or weighed against rate of return calculations?
4. What are the distinctions between the types of projects for which the rate of return is the key factor and those for which it is not? Have there been changes in recent years? Why?
5. If several types of assessment procedure are used, what is their relative importance in various circumstances?
6. What account is taken of the uncertainty of the expected results of capital expenditures? Are estimates always single-valued? In range form? Are break-even calculations made? How are the probabilities of various outcomes compared? What is the net effect of whatever risk allowances are built into cost and revenue estimates? What objective allowances for risk are made? Or are different rate of return standards expected to account fully for risk?
7. How does the company's system of transfer prices affect the rates of return anticipated and required in various departments and product areas? When the expansion of one division of the company is being contemplated, what account is taken of the effects of the expansion on the profit of other divisions?
8. What would be the calculated rate of return effects, using the company's established assessment procedures, of various changes in tax rates, investment credits, and depreciation allowances?
9. How applicable do executives think established assessment procedures would be in the light of tax changes similar to the ones considered under question 8 above?

#### V. Motivation of Decision-makers

1. What are the announced objectives of officials in different sectors of the firm responsible for developing and screening capital expenditure proposals?
2. Do their descriptions of the development of particular projects square with their announced objectives?
3. If there are apparent differences in the objective of officials responsible for various aspects of planning, what are the resultant effects on capital expenditures? Is there one point of view which is dominant in certain circumstances? Does this pattern of influence change from time to time? (e.g. possible relation between factor scarcities and the roles of different departments in final decisions.)

4. Has past use of fiscal policy been such as to change management's attitude toward capital expenditures (independent of direct profitability or liquidity effects)? What particular fiscal measures, if any, have been dramatic enough to cause a noticeable change in outlook?
5. What is management's opinion of fiscal policy as a counter-cyclical device? What effects do government deficits per se have on expectations?
6. What do executives think of the wisdom and efficacy of certain fiscal measures (changes in depreciation provisions, personal or corporate income tax rates, tax treatment of capital gains, and taxes or incentives related to the level of sales or investment) under various presumptions about the level of national income and employment, credit conditions and foreign exchange policy? What are the likely consequences for corporate behaviour?
7. How important are stock option plans in the remuneration of key decision-makers? Are there any differences in the attitudes or goals of executives depending on whether or not they have stock options? What are thought by company officials to be the effects of personal income tax rates, and possible changes thereof, on executive incentives?
8. Is the decision-making pattern of the executive group (taken as a decision-making unit) such as to provide support for one of the various hypotheses about entrepreneurial motivation?

#### VI. The Preparation of Budgets and the Timing of Capital Expenditures

1. Obtain a complete description of the process by which the capital budget is created, revised, approved, and reviewed.
2. How far ahead are contract commitments made on various types of budgeted expenditures?
3. How frequently is the capital budget revised, and what kinds of changes are made?
4. If a new project is developed, how is it worked into an existing capital budget? What are the resultant effects on other budgeted items?
5. How specific is the budget at various stages of its development?
6. Breakdown current outlays into those on projects started in prior periods and those undertaken in the present period.
7. For those projects commenced in a certain period, ascertain the pattern of related expenditures in subsequent periods, and assess the possible freedom for advancing or postponing these outlays.
8. For a given period  $t$ , examine the projects budgeted for the period  $t$  plus 1, and assess the difficulties in advancing their starting dates into period  $t$ . Note expenditure effects in subsequent periods.
9. What relationship is there between whatever "shelf" of potential projects there may be and the expenditures tentatively budgeted for future years? Assess for individual projects the reasons why the lists are or are not identical.



## VII. The Approval of Capital Expenditure Proposals at Higher Levels

1. Obtain a description of the stages of higher approval which projects must receive, and analyze the data which are presented to management at each level. Examine reports of senior budget meetings and board meetings, and obtain verbal reports from different participants of the relative importance of the factors considered.
2. How often are formal plans altered at the senior level?
3. Assess the relative importance of various outside influences on budget committee and board decisions about individual projects and budget totals.
4. What is the effect of any given level of capital expenditures in the present and recent past on the attitude toward new expenditure plans?
5. Where limits to growth are discussed at the senior level, what is their relative importance?
  - a. shortage of personnel
  - b. shortage of new project ideas
  - c. difficulties involved in co-ordinating a larger number of new projects
  - d. doubts about the long run future of the industry
  - e. shortage of funds, either internal or external
  - f. tax considerations
  - g. risk of combines investigation
  - h. poor sales outlook for present products, coupled with limitations of some kind on the opportunities for diversification.

## VIII. Research and Development Expenditures

1. Obtain a record of past expenditures on research and developments, and description of the ways in which the funds have been spent.
2. How is the budget figure for research and development determined? Is it ever altered during the budget year? For what reasons?
3. What measures are there of the return on funds expended in this area? Are expenditures attributed to specific projects?
4. What capital expenditures are made to provide research facilities?
5. Is it possible to trace the number and nature of expansion projects which were undertaken on the basis of research and development work within the firm? Did the projects involve net expansion of capacity, substitution of processes, or both?
6. Did the recent taxation changes involving research and development lead to increases in the volume of such expenditures?
7. Are there other expenditures which the firm makes in an effort to discover new investment opportunities? (Market surveys, technical information contracts with other firms or outside research establishment, etc.) How is the volume of such expenditures established? Can their yield be measured?



## IX. Inventories

1. Who is responsible for setting inventory target levels? In what terms are they phrased? What past changes in economic conditions have led to changes in desired inventory levels?
2. If inventory levels are established with the aid of a computer, examine the variable factors in the programming. Are the determinants of the programme recognized by officials responsible for inventory control? What changes in conditions might cause changes in the target levels?
3. What analysis is made of divergences between actual inventories and target levels? What types of corrective action are taken?
4. Does management think there to be any relationship between tax provisions and inventory investment?
5. To what extent have anticipations of price changes or supply shortages been involved in inventory decisions?

## X. Actual and Anticipated Effects of Certain Tax Changes on Investment Decisions

1. Change in depreciation provisions, 1951 and 1952.
2. Increase in maximum corporate tax rate from 45.6% to 52% for corporations outside Ontario and Quebec (P.Q. from 52.6% to 54%, Ontario from 52.6% to 52%).
3. Decrease in maximum marginal corporate rate from 52% to 49%, except for Quebec, where the decrease was from 54% to 49%, 1953.
4. Dividend tax credit increased to 20%, 1953.
5. Decrease in maximum marginal corporate rate from 49% to 47%, all provinces, 1955.
6. Increase in maximum marginal corporate rate from 47% to 49%, Ontario only, 1957.
7. Increase in maximum marginal corporate rate from 49% to 52%, (Ontario) and 47% to 50% (all other provinces), 1959.
8. Increase in manufacturer's sales tax from 10% to 11%, 1959.
9. 15% tax on certain non-resident corporations, 1960.
10. Accelerated depreciation for production of products new to Canada or new to a surplus manpower area (Regulation 1108), 1961.
11. Accelerated depreciation for re-equipment and modernization (Regulation 1109), 1961.
12. Increase in maximum marginal corporate rate from 50% to 52% (Quebec only), 1961.
13. Increase in maximum marginal corporate rate from 50% to 51% (Manitoba and Saskatchewan), Ontario and Quebec stable at 52%, all other provinces at 50%, 1962. Tax credits for increased sales (Section 40A), 1962.
14. Tariff surcharges, June 1962.
15. Proposed change in withholding tax, 1963.
16. Proposed accelerated depreciation for certain capital expenditures, 1963.

17. Proposed tax holiday for new ventures in certain areas, 1963.
18. Proposed change in coverage of manufacturers' sales tax, 1963.
19. Proposed 15% withholding tax on management or administration fees paid to non-residents, 1963.  
(Consideration should also be given to measures which affected specific industries.)

## XI. Hypothetical Effects of Possible Future Tax Policies

On the basis of information relating to the effects of past changes, and the effects of possible future tax changes on the rates of return indicated by the company's assessment procedures, it should be feasible to analyze the possible expenditure effects of various kinds of tax change designed to encourage or discourage investment.

The kinds of questions which can be usefully asked of corporate officials at this point will depend too much on the nature of the company's decision-making tactics and investment opportunities to be spelt out in detail in advance.

## XII. Questions Specifically Directed at Firms which are Subsidiaries of Foreign Corporations

1. What is the division of decision-making between the Canadian firm and the parent company?
  - a. Project by project approval? (over what size?)
  - b. Annual budget review? (what type of changes are made?)
  - c. How closely are rate of return standards aligned with those of the parent?
  - d. Where are project ideas initiated?
  - e. How frequent are joint consultations?
2. To what extent does the planning by the Canadian company consider the effects of Canadian actions on the operating profits of other firms controlled by the parent?
3. Does general corporate policy set limits to the types of products to be made or the markets to be served by the Canadian firm?
4. How does the parent-subsidiary relationship affect the company's financing?
  - a. Is there an express parental guarantee of the company's borrowing either in Canada or abroad?
  - b. Does the firm borrow regularly from the parent? Is the use of parental funds a matter of course or recourse?
  - c. Is the inter-company trade account used as a source of funds?
  - d. How is the dividend policy set?
  - e. Is there an established policy setting the amount of the parent's equity in the subsidiary?
  - f. Does the degree of parental control of expenditure policy depend at all on the current degree of the subsidiary's reliance on parental loans and guarantees?

5. What determines the flow of technical and market information between the parent and subsidiary? On what basis does the subsidiary pay for research done by the parent? Does the Canadian tax treatment of research and development expenditure affect the relative amount of such expenditures made in Canada?

## APPENDIX II—PRICING DECISIONS

An analysis of corporate pricing is required for two reasons:

(1) Estimates of expected future revenues are perhaps the most important, and reportedly the most difficult to measure, of the elements involved in the evaluation of investment opportunities.

(2) The effects of tax changes on investment will depend on the extent to which prices change as a consequence.

There have been some studies in other countries of the policies and practices of corporate pricing. 1/ A specifically Canadian analysis is necessary because the markets in which Canadian producers sell differ materially from those occupied by the firms analyzed in other studies. In addition, most other studies have considered industrial pricing over a fairly narrow range of products, without specific consideration being given to the price estimates involved in investment decisions. This appendix does not contain an adequate analysis; nor is it suggested that the methods of investigation used are the most appropriate for a study of price and price changes. Nevertheless, the interviews conducted for the Royal Commission on Banking and Finance and the Royal Commission on Taxation, particularly the latter, during 1962 and 1963 at least demonstrated that the usual analyses of corporate pricing are not appropriate to the Canadian situation. These few pages contain a fraction of the information collected, and an even smaller fraction of the information which would be required for an adequate understanding of the complex and fast developing markets in which Canadian output is sold. These pages will offer only a brief explanation of the ways in which price expectations



are formed by some large firms, and some sketchy analysis of the effects of certain cost changes (including tax changes) on prices.

The best way to arrange the analysis is by type of production, even though this will involve splitting the activities of certain firms. The following main product groupings will be considered:

TABLE I

	Approximate Total Value of Sales by All Corpora- tions in the Fiscal Year 1960*	Approximate Total Value of Assets of All Corpora- tions in the Fiscal Year 1960*
	(in billions of dollars)	
1. Agriculture, Forestry and Fishing.	.3	.4
2. Extraction and Refining of Oil and Natural Gas.	1.9	4.2
3. Metal and Mineral Mining and Smelting.	2.5	5.3
4. Sawmills, Plywood Mills and Miscellaneous Wood Products.	1.4	1.2
5. Pulp and Paper Mills and paper products.	2.0	2.9
6. Food Products (including beverages).	4.8	2.5
7. Iron and Steel Mills and Foundries.	1.3	1.3
8. Other metal products, machinery, motor vehicles, electrical products, and transportation equipment.**	6.2	4.4
9. Other manufacturing, including textiles and textile products, chemicals and chemical products.	6.7	5.3
10. Construction.	4.2	2.5
11. Transportation.	2.1	4.5
12. Telephones, electric power, and other utilities.	1.2	4.9
13. Retail and wholesale trade.	21.0	8.4
14. Finance, insurance, real estate, and services.	<u>2.8</u>	<u>19.6</u> ***
	58.5	67.5

\* Source: Taxation Statistics 1962, pp. 116-153. The industrial classifications are according to the Industrial Classifications Manual, 1960.

\*\* The total of industrial groups 13, 14, 15, and 16 in Taxation Statistics, 1962.

\*\*\* Includes 10.8 billion dollars in securities and "investments in affiliates" held by financial institutions.

Note: Figures may not add due to rounding.

These statistics refer to all corporations submitting tax returns, and thus contain assets and sales figures which would cancel out if the figures were presented on a more consolidated basis. If the figures for all corporations owned more than 50% by another corporation or group were consolidated with those of the parent company, the figures might be reduced by more than one third in some industries. The groups outlined above will be considered separately, although it must be recognized that many of the products within a single grouping have little or nothing in common with one another.

The general statements about the behaviour of firms in the various industries are based on the large firm interviews in 1962 and 1963, and as well on a study of the history of the pricing and production of several key commodities in each industry. Where quotations are used they have been derived from either the 1962 and 1963 interviews on behalf of the Royal Commission on Banking, or from the 1963 interviews on behalf of the Royal Commission on Taxation.

#### Agriculture, Forestry and Fishing

Most of the output in these industry groupings is produced by unincorporated businesses; most of the corporations involved are subsidiaries of larger integrated firms whose pricing policies will be considered below.

#### Extraction and Refining of Oil and Natural Gas

Most of the integrated petroleum firms, as well as the oil and gas producing firms, plan their capital expenditures on the basis of a continuation of the present posted well-head price for crude oil, while making a wider range of presumptions about the likely future price of gas.

Officials noted the Suez crisis and the institution of the national oil policy as occurrences which could not be predicted and which have significant effects on the pattern of prices. The Alberta system of allowable rates of extraction, and the dominance of one producer in the Saskatchewan fields combine to make a stable market not subject to wide price fluctuations. The oligopolistic nature of the industry makes it virtually impossible to predict what price changes might follow changes in costs. The situation is perhaps most complicated with respect to tax provisions, as some of the large firms are currently paying income taxes, while others will not be in a tax-paying position for several years. Since the importation of petroleum and refined products is in the hands of the same firms that are producing the domestic output, a situation exists wherein tax changes could be followed by price changes. The result would probably depend more upon how close the refineries were to capacity operation, and the closeness of the relationships between the firms, than on the sensitivity of domestic demand to changes in the price of petroleum products.

#### Mining and Smelting of Metals and Minerals

The major part of the output of Canadian mines and metal refineries is exported. The prediction of metal prices is considered by some corporate officials to be the most difficult part of assessing the potential profits of a prospective mine. The uncertainties are caused not only by the rapid change of demand from metal to metal as new uses are developed and old ones abandoned, but also by the periodic occurrence of major discoveries in Canada or abroad. The larger producers may attempt to diversify into other metals in order to lessen the risk of drastic fluctuations in sales revenues. Another approach adopted by one firm (a leading

world producer of a base metal) is to attempt to develop a wide range of new uses for the metal throughout the world so as to obtain the stability of a multi-purpose product sold in many markets.

A marketing official in another firm suggested that the selling of metals is coming to have much in common with that of consumer goods. The metal producer is no longer content to mine and sell his output as fast as possible; the major companies make efforts to discover new uses for their products and to acquaint potential users with all the possibilities. <sup>2/</sup> The aim is to develop uses for which the demand for the metal will be stable over a considerable period of time.

Some metals are more subject than others to changes in demand; in particular, the newer metals with specialized uses are likely to be in heavy demand for a fairly short period of time. One official referred to these metals as "the exotics", and stated that an extraction process designed specifically for their production would have to promise an above-average discounted cash flow rate of return before it would be undertaken.

One base metal producer suggested that substitutability between metals has become great enough to restrict price swings for the major metals to a range of approximately 20%, given the existing world reserves and level of production. Some producers make single estimates of prices when evaluating new mines, while others employ a variety of possible prices and examine the sensitivity of the rate of return to changes in the price of output.

A base metal producer makes price estimates on a range basis, with the limits to the range being 10% apart. When assessing the likely stability of these prices, officials examine the costs of other producers as a means of judging the ability of their own proposed facilities to maintain a market position in the face of price fluctuations.



Except in the few cases where the world supply is dominated by Canadian production, the prices of metals are determined more or less independently of the actions of the Canadian producers. For several metals this must be qualified by a recognition that the market prices may differ from the effective prices by means of special discounts or other concessions to large buyers. It was reported by one marketing official that such special concessions are fairly common, and that sales volume is quite closely dependent upon them. With this qualification, the market price is accepted rather than set by most of the Canadian producers. Evidence for this is provided by the stability of the world price of base metals in face of changes in the Canadian exchange rate:

An official of a mining company said that a change in the exchange rate affected the Canadian dollar return from export sales, but would not result in a change of their prices in terms of foreign currencies. He said that under current market conditions a 1% devaluation of the exchange rate causes a 2% increase in the company's after-tax profits.

Changes in the net profits of Canadian producers, whether caused by changes in world prices, the exchange rate, domestic costs of production, or taxation, have in the past led, in the short run, to shifts in output by marginal producers, and, in the longer term, to a change in the level of investment in the industry. To some extent the dependence of Canadian producers on world markets is being lessened by further processing in Canada and the development of new long term uses for various metals, but for the most part cost and tax changes are, in the short run, absorbed by changes in net profit (and output) and, in the longer run, by changes in the level of investment in new capacity. A special case is the development of iron mines by syndicates of United States and Canadian steel

producers mining for their own use. Here the tax treatment might have marginal effects on the level of production, and greater effects on the level of new investment, although the initial costs in these projects are so great that, for the existing mines and those under construction, the scale of output would not be affected by most changes in the Canadian costs of production.

#### Sawmills, Plywood Mills, and Miscellaneous Wood Products

For the finer grades of lumber and plywood the price structure is closely related to conditions in export markets. More than one half the output of the higher grades is exported. The domestic prices of these products are higher by an amount not exceeding the Canadian import duty. On the lower grades, whose manufacture is more localized in the hands of smaller firms, the price structure is much less stable, reflecting the relative ease and lack of co-ordination of entry. In the short run, the output of most of the mills is reduced when demand falls but by not enough to maintain stable prices. The price swings in the lower grades of logs and lumber would be even more marked if there were not some large firms that purchase logs in quantity at times of low prices, mills which build inventories rather than accept low prices, and other mills which put low-grade material through a chipper (for making pulp chips) or into the burner when prices do not cover the costs of milling and storage. Transport costs are a relatively large element of the costs of the lower grades, and local producers often maintain themselves under the protection provided by the distance of other sources of supply. Since transport costs and duty often permit higher prices on local sales, producers tend to service the domestic demand first and then attempt to develop export

markets for the remainder of their production. For the more specialized wood products, such as plywood, the establishment of overseas sales depends not so much on marginal changes in price as in gaining acceptance for the product in new uses. In United States markets the price is the most important factor in sales, although price decreases must apparently not be too large, or penetration of United States markets too rapid, lest the United States lumber and plywood producers be successful in obtaining increased tariff protection against the Canadian products. The change in the exchange rate in 1961-62 permitted the smaller west coast mills to offer lower prices in United States markets and to increase their sales.

Although the prices of lumber and most wood products are sensitive to changes in demand, the effects of cost changes affecting Canadian operators are difficult to assess. When the exchange rate shifted, the gains to exporters were taken in part through price increases (in terms of Canadian dollars), and in part through volume increases. A change in taxation might similarly be supposed to have some price effects and some volume effects, with the latter more likely to arise in the longer run. If demand were high, if there were little excess capacity, and all producers were more or less equally affected by a tax increase, it would almost certainly be passed on to some extent in higher prices. The extent would be determined by the firms' estimates of the price elasticity of the demand for their products. Those executives who were questioned on the subject thought that tax changes would find their way into prices fairly quickly, but said that the price structure for many of their products was so unstable that it would be difficult to isolate the effects of tax changes. In times of low building activity, income tax changes might not be expected to have substantial effects on prices, since a number of

marginal producers would not be in a taxable position. The stabilizing pressure on prices in times of both high and low demand would come from competition of substitute materials, whether of domestic or foreign origin. It has already been noted that this pressure is greater in the case of the higher grade wood products, which face a wider range of substitutes and can be more easily shipped from one market area to another.

### Pulp and Paper

Increasing competition from southern United States mills has considerably decreased the pricing freedom which Canadian producers, as a group, might previously have had. The Canadian domestic price for newsprint is marginally higher than the New York price, and both are stable. In both pulp and newsprint the competition is primarily on the basis of quality. Competition has led virtually all of the major Canadian firms to make what they refer to as "non-return" investments necessary to increase the brightness of their pulp and paper to compete with the product of the southern United States mills. The substantial amounts invested in relatively minor quality improvements attest to the desire of the producers to maintain a stable price and to compete on other grounds. There have been occasions when changes in the Canadian costs of production have been used to explain increases in the New York price of newsprint (the appreciation of the Canadian dollar in the 1950's was the basis for one price increase), but the substantial increases in the capacity of the United States mills have lessened the possibility for unilateral action by Canadian producers to alter the New York price. The 1961-62 depreciation of the Canadian dollar did not result in any change in the export prices of either pulp or newsprint. The probable stability of the export



price of pulp and paper in face of changes in the costs of Canadian producers is especially significant because of the predominance of these products in the economy. Exports of pulp and paper were almost 1.1 billion dollars in 1960, 3/ about 20% of total merchandise exports. The pulp and paper industry's total sales were more than 6% (by value) of those of all manufacturing. 4/

#### Food and Beverages

Agriculture is largely outside the corporate sector, so that the determination of the prices of basic agricultural products is outside the sphere of this study. Since agricultural products and livestock comprised more than 20% of Canada's exports in 1960, and 15% of the value of imports, it may be assumed that a large fraction of the food industry's output is priced in line with foreign markets or landed prices of foreign produce. The situation differs slightly in the case of alcoholic beverages (11% of the total 1960 sales of foods and beverages), whose sales prices in Canada and in export markets are more independently determined. For individual food products, of course, there may be little import competition and small chance of export; their prices may be fairly sensitive to changes in the costs of corporate producers. For most products, with the exception of those which are highly differentiated, changes in tax regulations affecting corporations would not be likely to have short run effects on prices.

#### Iron and Steel Mills and Foundries

As the Canadian basic steel industry has grown, the protection provided by tariffs against competing sources of supply has proven more

than adequate in at least the central sections of the country. As a consequence, the prices of some steel products have become relatively independent of prices in the United States, and steel companies have collectively found themselves able to develop a pricing policy. In normal markets some major producers have adopted the policy of pricing so as to maintain a certain gross margin on the sales price of basic products. Quotations from annual reports to shareholders may help to indicate the type of price policy adopted:

- \* "Despite substantial increases in all cost factors, particularly wages and raw materials, only moderate upward adjustments were made in the selling prices of your company's products during 1955. Indeed, after the introduction of the budget in March, prices were reduced to pass on in full the decrease in corporation tax rates. Later in the year, and only after wage and other cost increases of serious proportions had developed, prices of some products were advanced."
- \* "Despite continually rising cost of production, your company has followed a consistent policy of moderation in respect of prices. During 1956, following sharp advances in the cost of wages and materials, it was necessary to increase the prices of most of your company's products. These adjustments, in the aggregate, were less than the cost increases and consequently profit margins were lower than in 1955."

Another way of assessing the pricing policy is to examine the kinds of price estimates which are employed in judging the worth of investment proposals. One firm has a procedure whereby three alternate price estimates are made, supposing the existence of various market conditions. Another firm assumes the continuation of present prices of raw materials and finished products when assessing investment opportunities, on the grounds that cost changes and price changes will parallel each other closely enough that the gross margin can be assumed to be stable. Although most of the basic steel producers appear to have a low enough price and cost structure to have some freedom in the pricing of certain

of their lines, 5/ it is clear that a really substantial amount of pricing scope exists only for those products which have the highest transport costs, and which cannot be produced without a large initial investment in plant and equipment. For much of the output of special sizes and shapes the market is established on the basis of the landed import price with little pricing choice left for the domestic producer. One official described a selective price increase as a general price increase adjusted to account for all the items on which the competition is most severe.

### Metal Products

These goods are, in general, import competitive. In some important cases, such as many consumer durables, the Canadian industry depends for its existence on tariff protection, and relies for its development on government policies to that end. The pricing of the Canadian output is not always derived directly from the landed price of imports, since in the case of many goods the Canadian industry is led by firms which are subsidiaries of the suppliers in the main foreign markets. Where this situation exists, it is the competitive relations among the parent firms which will determine the margin between the Canadian and United States prices and the range of goods made by the Canadian subsidiaries.

In the case of a few firms the pricing and investment policy operates within a target market share constraint:

\* Q: "What is the limit on the growth of this company's current productive capacity?"

A: "...we have a general target area of what we wish to retain as our position in the Canadian market. The target area is in the range of [X% to 1.2 times X%]. If we find that our market share is dropping to x% and staying there, then we feel that we owe it to our shareholders to expand. If we find our market position rising toward 1.2X% or beyond, then we go slow and tidy up a bit within the plant. We're constantly reviewing our position in the Canadian market in the light

of anti-combines policy. That's the constant concern of our company, and every time we make an acquisition — a purchase of a consumer or small plant — the whole proposition is reviewed for possible anti-combines conflict."

This type of situation was not encountered frequently among the products and firms studied. For most of the many metal products there are close enough substitutes available from domestic and foreign sources that prices are quite closely related to the landed price of foreign goods. Once domestic capacity of a certain kind has been installed, then cyclical excess capacity might easily cause the Canadian prices to be lower from time to time than the landed price of imported goods.

- \* One manufacturer of capital goods has three price scales which provide the basis for the company's bids or quotations under varying degrees of pressure of capacity. When the level of activity in the economy is low, the schedule of the lowest prices is used, and the company submits bids on export contracts as well. When cyclical or seasonal pressures on capacity are great the higher prices are quoted, and less effort is made to obtain the lower profit export contracts.

But in general these firms consider their prices to be set by others:

- \* "The pricing policy in this company is a rather simple matter: we are surrounded by armies of competitors, in particular from the United States. Our prices are more or less dictated by our competition. Now we have enough commercial intelligence to find out what our competitors' prices are. We take those prices and ask ourselves whether we could sell at such prices and still make a reasonable profit."

In the few cases where pricing policy was analyzed in detail, it appeared that the firm contemplating entry into the production of an import-competitive good had great difficulty in making price estimates, not knowing whether other domestic firms were contemplating entry or what kind of defensive action would be taken by the foreign exporter. The situation arose for many firms when the external value of the Canadian



dollar dropped during 1961 and 1962. Not only did firms have to gauge the reaction of foreign and domestic competitors; it was also necessary to judge whether the exchange rate was likely to remain at this new level. In face of these uncertainties, many firms concentrated their efforts on improving their position in existing markets.

\* "When the exchange rate shifted in 1962 ... our strategy was to increase our prices enough to cover our increased costs, ... but to keep them low enough to attract increased business."

Q: "Did this bring you into new products as well as increasing your share of established markets?"

A: "The latter is the case, with small exceptions. The change just gave us more sales in the established kind of markets."

The exchange rate shift also increased the Canadian dollar returns on goods being exported by Canadian manufacturers. In several instances firms found that the 10% depreciation of the exchange rate was enough to open up certain markets to them, while others were able to improve a weak position.

\* "After the shift in the exchange rate we found our competitive position much improved in foreign markets, especially in the United Kingdom, where we were competing against other imported products which were then more expensive in relation to ours."

The interviews for the Banking Commission and the Taxation Commission were not full enough or numerous enough to allow a balanced picture to be drawn either of the manufacturers' views of the price elasticity of demand for their products or of the relationship between the Canadian prices of retail products and the landed price of imported goods. To do so it would be necessary to obtain, for a representative group of goods, both Canadian and import prices for products with equivalent specifications. Similarly, it would be necessary to know the expected production costs

of import substitutes. In the absence of this kind of information, it is possible to present only a tentative view, based on a small range of examples, that short run shifts in prices to reflect changes in Canadian costs are not likely, while changes, such as exchange rate shifts, which affect the prices of imports are likely to be at least partially matched by changes in the prices of domestically produced goods.

### Other Manufacturing

This product group is even more heterogeneous than that described above. Here, too, the lack of adequately detailed information prevents any firm conclusions being drawn. The products vary from new chemicals with short and unpredictable life cycles to the most stable of consumer goods. The quotations below attempt to expose the aspects in which the pricing policies of Canadian manufacturers of a wide range of goods differ from those of firms operating in less open economies.

\* An official was asked to explain how price estimates were involved in the choice of products and the planned level of production:

"The senior vice-president will gather together every few weeks the volume and price estimates for the various products. (The prices are largely determined by competition). He will then examine the various products to see if they promise a reasonable profit. Now, mind you, in this company we are oftentimes forced to produce at no profit at all ... one of the main reasons is that having plants lie idle is probably a lot more expensive than keeping them running."

Q: "When you say 'at no profit', do you mean that those products will not cover the full costs of their production?"

A: "Exactly."

Q: "Although they may easily cover more than their direct costs of production?"

A: "Yes."

Q: "Are unprofitable lines ever dropped after the senior management review?"

A: "On occasion—not very often. This may become a more critical matter as we reach full capacity in this company. From now on we might become much more selective."

Q: "Are any of these lines which are unprofitable in themselves necessary to maintain the sales of more profitable products?"

A: "We think so."

Q: "How do you take account of that kind of influence when you are assessing the profitability of a line?"

A: "It's intangible, because the dropping of a line may have political ramifications. You are familiar, no doubt, with the tariff regulations referring to products 'of a class and kind made in Canada'. Well, if we drop an unprofitable item, which for the same reason is not being made by any other firms in Canada, we are giving our customers a pretext to go to Ottawa and ask for an exemption of duty because the goods are of a class or kind not made in Canada. Our experience [with this sort of exemption] is not very good. Once the doors are opened for people to bring in certain goods of a class or kind not made in Canada, there are always ways and means of getting a lot of other goods into the country under that exemption. This kind of thing is difficult to control, so we shy away from it in this company."

Q: "From dropping any product lines?"

A: "That's right. Of course there are conflicts there, one being that if we are at capacity we should be selective and producing only those items that are bringing us profit. The other side of the argument is that if you drop any products you may create unfavourable conditions [for the sale of other products]."

This kind of reasoning was used in several firms to explain a continuation of temporarily or chronically unprofitable product lines. Several attempts were made to discover how widespread is the influence of import prices on domestic prices:

\* Q: "For what percentage of your sales would foreign competition govern your prices?"

A: "For perhaps 60 or 70% of our sales it is foreign competition that sets the price."

Q: "Does that mean that your price is equal to the foreign price plus the duty?"

A: "Yes. Equivalent to what we call the landed price. Now the nature of the foreign competition may be either direct or indirect. Either a foreign competitor ships in the same product we are producing, or else a product is shipped in to compete with something made by one of our customers. In the latter [indirect] form of competition, there is only a certain price that our customers can afford to pay for our product and still compete with the foreign producer."

Naturally there were wide variations in the degree to which foreign market prices affected pricing policy. The interview coverage was too



scanty (virtually nothing was discovered about the smaller manufacturers) to permit any generalizations. It might be supposed that the larger firms interviewed might be those most concerned with foreign competition, while the smaller Canadian firms might operate within the pricing framework established by the largest corporations. For some of the firms interviewed the foreign prices provide the basis for estimates of domestic prices.

- \* Q: "How do you make your price estimates for your basic products?"  
 A: "Well, we are completely dependent on the conditions in foreign markets (even when we do not sell in them). If there is a stable item being produced in the United States and also by us, we will have to follow the swings in the U.S. prices. So we really have to be able to forecast economic developments in foreign markets, which is something that we are trying to learn to do. But we just cannot tell what prices are going to hold in certain overseas markets in a year's time ....We make our dollar sales forecast on the basis of existing market prices. If there is a general sales slump in the economy outside the country, and competition lowers prices, then we will lower prices too."

Certain efforts were made to discover how fixed is the relationship between competitive import prices and those of goods manufactured in Canada:

- \* Q: "Are there products where you have an opportunity to change your share of the market by changing the price which you charge ...?"  
 A: "There are possibilities. I will illustrate with an example. A few years ago we suffered from intense European competition on one of our products. We decided to counter this competition by deliberately dropping our price on this item below the landed cost of the foreign item and were able to recapture the market on this particular item. In fact, we were able to exceed our former volume, but it was a loss situation ....This was in days gone by when our plants were not at capacity ... it was often decided to meet competition head on regardless of the costs involved, in order to keep at least a half-way decent level of production in our plants. It was done at great sacrifice, but it paid off in the long run, because we maintained a foothold in the business. Now we hope that in this business the cycles will be such as to allow us in the good years to accumulate enough fat to help us out in the lean years. To date this has turned out to be the case."



Q: "You have described your prices as being determined by foreign competition. The 1962 change in the exchange rate raised the landed price of imports. Did you then raise your own prices? "

A: "To a small degree. It was our company policy that when the exchange rate dropped we would not take full advantage [of our power to raise prices]."

Q: "In other words, you took some advantage in market share and some in price?"

A: "That's right. Where we were suffering from low prices we would jack them up a little bit, but where there were items on which we already made a reasonable profit we deliberately did not raise our prices."

Q: "If something like that were to happen again now that you are operating at full capacity and are not easily able to increase your market share, would there be a natural tendency to follow the price increases?"

A: "I would say that we would try to overcome the pressures on capacity by buying in semi-finished products and by making capital expenditures [to remove the bottlenecks in production]."

The examples above refer to prices of established products. There was evidence also that the adoption of new products might be caused by prior actions of either foreign or domestic competitors:

\* Q: "Does a new product have to promise any particular contribution to profit before it is taken on?"

A: "Ideally, yes."

Q: "In fact?"

A: "In fact, it sometimes does not, because we have a philosophy that a company such as ours ought to be in a position to supply our traditional customers with anything they need in our field. This is a commercial policy, because if you refuse to make a given item for a customer he may be forced to look elsewhere for it, and when looking elsewhere he may find something else which we would have loved to have sold him. As I have said, ten years from now this may be completely different, because if the market grows, and if our share grows, we may be forced to become selective or to greatly increase our capacity."

All of the above examples hint that import competition, which influences Canadian secondary manufacturing almost as much as export markets dominate the processing industries, has considerable effects on the formation of price expectations and on investment decisions. Close import competition removes an element of decision in pricing, and if any-

thing increases uncertainty about the size of the potential market in terms of both volume and price. There were slight indications, too, that a few Canadian manufacturing firms take on new products and continue to produce existing ones even when the best guess of likely prices does not indicate an acceptable profit on those products considered by themselves. Their customers apparently prefer "one-stop shopping", making it necessary for the firm to make a wider range of products than would be advisable if the products could be considered independently.

The flexibility of prices in response to changes in domestic costs of production undoubtedly varies greatly among products. Presumably the flexibility of prices is less, and the adjustments in volume greater, where the import competition is greatest and the market adjustments most rapid.

### Construction

Evidence about construction pricing was only obtained at second hand from firms obtaining bids for the construction of their new plant facilities. It was abundantly clear that the bids for construction work vary considerably over the business cycle, suggesting that the level of fixed costs or difficulties of entry and exit are greater than would be indicated by the construction industry's low ratio of fixed assets to value of output. Without doubt the situation differs with the size of firm and type of construction. Small firms specializing in residential housing appear to come into existence or be extinguished almost overnight, while the fixed assets required for heavy construction would make the population of larger firms more stable. It is the relative stability of the number of heavy construction firms which is one of the key causes of the substantial cyclical variations in construction prices. No measures were

made of the degree of price flexibility in construction bids, the ways in which the bids are prepared, or the extent to which they are affected by competition from international construction firms.

#### Transportation and Utilities

Most transport and utility prices are directly or indirectly governed by regulatory bodies. Almost without exception, the regulated prices are set so as to produce for corporations the approved rate of return either on shareholder's equity or on the asset base. In these circumstances, pricing decisions follow almost automatically once decisions have been made about the standard of service, the area to be served, and the extent of cross subsidy among consumers. For the analysis of the response of prices to changes in corporate costs and profits, the only open question is the speed with which the price adjustments are made. No study was made of the corporate and administrative lags which would cause price changes to lag behind changes in the costs of utilities and transportation firms.

#### Retail and Wholesale Trade, Finance, Insurance, Real Estate, and Services

There was no systematic investigation of the price-setting methods employed in these sectors. Both retailers and wholesalers tend to set prices to maintain gross margins on sales, but no study was made of the determinants of the margin, of the reasons for past changes in mark-ups, or of the frequency or size of mark-downs. The finance, insurance, and real estate sectors are beyond the scope of this study. The service sector's importance is under-estimated by the figures for sales by corporations, since most services are provided by unincorporated business.

Almost all the corporations involved in the service industries are small, and none have been interviewed for this study. In general the service area is one where export markets and import competition would be expected to have only relatively minor effects on domestic prices.

### Conclusion

This section has not attempted to evaluate or even outline all the key variables affecting the pricing policies of large corporations. Some important differences between industries and products have been ignored. The only evidence which has been presented with any thoroughness is that demonstrating the differences between the kinds of markets faced by large Canadian firms and those dealt in by firms in other countries whose pricing policies have been examined by economists. The most important evidence presented is that indicating the prevalence of price setting to match the landed price of imports or to maintain positions in export markets. This may be seen to restrict considerably the pricing freedom of these firms, and to reduce the possibility that changes in costs or taxes affecting only Canadian producers would result in price changes in the short run. In the longer run, changes in investment and output might be expected on the part of firms with alternative investment opportunities in other countries. 6/



## REFERENCES

- 1/ A sample of the more comprehensive studies of corporate pricing in other countries might include: R.F. Lanzillotti, "Pricing Objectives in Large Companies", The American Economic Review, Vol. XLVIII, December 1958 p. 921; Committee on Price Determination for the Conference on Price Research, Cost Behaviour and Price Policy, New York, N.B.E.R., 1943; R.B. Heflebower, "Full Costs, Cost Changes, and Prices", in Business Concentration and Price Policy, N.B.E.R., 1955, p. 361, Bjarke Fog, Industrial Pricing Policies; An Analysis of Pricing Policies of Danish Manufacturers, North Holland Publishing Company, Amsterdam, 1960; R.L. Hall, and C.J. Hitch, "Price Theory and Business Behaviour", Oxford Economic Papers, No. 2, Oxford at the Clarendon Press, May 1939; P.W.S. Andrews, Manufacturing Business, MacMillan, London, 1949, Chapter V; R.R. Neild, Pricing and Employment in the Trade Cycle, National Institute of Economic and Social Research, Cambridge University Press, 1963.
- 2/ e.g., three major producers held a one-day seminar in November 1963 to acquaint architects and engineers with new uses and applications for zinc.
- 3/ Canada Year Book, 1962, p. 964.
- 4/ Dominion Bureau of Statistics, The Manufacturing Industries of Canada, 1960, Geographical Distribution, Ottawa, 1962, pp. 16-17.
- 5/ The firms in this industry are among the few whose pricing policies are at all like those described by Lanzillotti as typical of many large U.S. firms, in "Pricing Objectives in Large Companies", The American Economic Review, Vol. XLVIII, December 1958, p. 921.
- 6/ No mention has been made of the exchange rate. Any change in domestic costs of production which tended to reduce the scale and raise the price of Canadian output would put pressures on exchange reserves or downward pressure on the exchange rate which would act so as to limit but not eliminate the stabilizing effects of import and export prices on the prices set by Canadian producers.

### APPENDIX III — INVESTMENT BEHAVIOUR OF FIRMS CONTROLLED OUTSIDE CANADA

Some attempt has been made to determine how foreign ownership affects capital expenditure decisions. In examining the effects of foreign ownership it is useful to distinguish four types of large foreign-controlled firms:

- (1) Firms established to produce raw materials for the use of a foreign parent company.
- (2) Subsidiaries established by foreign firms to produce goods for Canadian markets where, in the absence of tariffs or similar discouragement to imports, the foreign firms would supply Canadian markets with goods produced by their plants in other countries.
- (3) Firms established in Canada, by foreign firms with experience in similar operations in other countries, to develop Canadian resources for sale in domestic or foreign markets.
- (4) Firms whose main operations are in Canada although the ownership is predominantly foreign. These firms do not have parent companies with similar operations in other countries, and are therefore more appropriately referred to as corporations controlled outside Canada than as subsidiaries.

These types of firm differ so much in their approach to capital expenditures that they will be separately considered.

Naturally any division of firms into particular groups for the purposes of analysis raises the danger that certain aspects of the topic

will be over-emphasized, and others ignored. This particular system of classification depends on the characteristics of industries rather than the behaviour of particular firms, and is, therefore, more useful for statistical analysis, and more likely to remain stable over time. It must be recognized, however, that some aspects of the investment behaviour of subsidiaries will not come as clearly to light as they might under an alternative form of classification. It must also be emphasized that the material in this appendix refers only to the largest corporations, and nothing in the appendix should be taken to imply that smaller subsidiaries behave similarly.

The following table shows the numbers of large firms in each of the four types outlined above, and uses their 1961 capital expenditures to provide some indication of the size of their investment in relation to that of the other large firms and of all corporations. Thirty-nine of the 70 large firms on which this study is based had 50% or more of their shares owned outside Canada at the end of 1962. They may be classified as follows:

TABLE I

<u>Type of Firm</u>	<u>No. of Firms</u>	<u>Industries Represented</u>	<u>Approximate Total of Capital Expenditure in 1961 (in millions of dollars)</u>
(1) Subsidiaries <u>1/</u> producing raw materials primarily for the use of the parent company	4	Mining & Petroleum	115 <u>2/</u>
(2) Subsidiaries Producing primarily for the Canadian market (generally not resource-based firms)	11	Chemicals, automobiles, and other manufacturing	60
(3) Subsidiaries producing for domestic & export markets (generally depending on Canadian natural resources)	18	Mining, petroleum, pulp & paper, Chemicals, & pipelines	265 <u>2/</u>
(4) Firms whose principal operations are in Canada although the majority of shares are held outside Canada	6	Utilities, mining & smelting, & retailing	265 <u>2/</u>
Total	39	Approximate total of capital expenditures For 1961:	705
Approximate total of capital expenditures for 1961 by firms with shares held more than 50% in Canada:			575
Total capital expenditures by 70 large firms: (approximately 40% of the total 1961 capital expenditures made by all corporations not owned by governments).			1,280

The figures for one year's capital expenditures, of course, do not constitute a reliable measure of the relative importance of the firms to the economy, particularly in the case of the extractive industries, where a firm may make very large expenditures to develop resources and only small maintenance expenditures thereafter. 3/



The rest of this appendix will contain a brief separate description of the investment behaviour of each of the four types of foreign-controlled firm.

#### Subsidiaries Producing Raw Materials for Use by a Parent Company

Although such firms may sell crude oil, ore, or concentrates to outside purchasers, their primary goal is to provide for the requirements of the owning firm(s). All the basic investment decisions are therefore made by the parent company on the basis of its anticipated requirements and the cost of raw materials from alternative sources. These firms are wholly owned by their parent companies (or groups of companies), and may have very little in the way of a separate management. Since the output is used primarily by the parent company, it is the relative cost of developing the resources which is the key factor in the development decision. There are apparently no specific investment rules applied when the major developmental expenditures are made, although smaller supplementary expenditures are expected to show a certain cost reduction if they are to be approved. These firms, as subsidiary units in integrated firms, do not make any of the usual corporate decisions about what products will be made and what markets will be served. The firms all obtain their financing directly from the parent companies.

#### Subsidiaries Producing Primarily for the Canadian Market

##### GENERAL

These eleven firms were almost all established because import tariffs made it advantageous for the parent company to provide for at least some of the Canadian sales from plant facilities in Canada. The percentage of common shares owned by the foreign parent company ranges from 50% to

100%, being in five cases 99% or above as at December 31, 1961. Three have parent companies in Great Britain, while the remainder are controlled in the United States. Decision-making procedures vary considerably among the firms, but almost all of the subsidiaries make the same range of products as the parent company, and enter new market areas only with the explicit approval of the parent company.

#### RANGE OF PRODUCTS

In all of the firms the product range of the Canadian firms is broadened by the inclusion of goods produced by the parent company. Many of the capital expenditures of the Canadian subsidiary create capacity which displaces imports manufactured by the parent. The management of the Canadian firm might or might not take account of over-all group profits when proposing expansion; it is more likely that the parent company does so. It was difficult to obtain examples detailing the effects of the subsidiary's capital expenditures on the operating profits of the parent company, since calculations are seldom if ever made. If there is an obvious conflict of interests, the project usually does not get to the stage where rate of return calculations are made. The officially established policy of the firm sometimes provides an idea of the approach that is taken: one subsidiary replaces imports with products of domestic manufacture if the costs of production at the anticipated volume (including the target return on capital) are no higher than the landed price (including duty and profit) of the parent company's output. Another takes account instead of the costs of production in the two countries, including Canadian import duties as a cost of production of the goods manufactured outside Canada. The theoretical difference between these two approaches is considerable, but it would require a substantial amount of information about particular decisions to assess its practical significance. Interview evidence on the matter must be treated

with the greatest of care, since the question has enough political significance that policy statements are not always accurate reflections of operative policies.

#### MARKETS SERVED

Several of the firms make export sales, predominantly to markets to which Commonwealth preference applies. In one organization the Canadian subsidiary may submit bids in competition with those of divisions in other countries; a choice between the bids is then made by top management in the international firm and one bid submitted to represent the entire firm. This is apparently an unusual procedure. In most of the firms there is less flexibility in the allocation of export markets. Since these decisions are generally evolved within the parent company, the few Canadian subsidiaries with which the matter was discussed had little evidence concerning the relevance of cost and revenue estimates to the division of export markets.

#### BUDGETING

All of the firms must obtain approval of their annual budgets from the parent company and obtain specific approval during the year for expenditures above a certain size. The maximum size of expenditures which can be made by the Canadian firm without obtaining parental approval ranges from a few thousand dollars to several hundred thousand dollars. This approval level is often taken as a measure of the autonomy granted to the management of the Canadian firm, and there does appear to be a fairly close relationship between the two, even though it is the informal rather than the formal relationships that govern the subsidiaries' policies. 4/

For several of the firms the approval required is not that of the management or board of the parent company, but of the Canadian board or the parent company's representatives on that board. The interviews with the R.C.B.F. large firm group were often not full enough to allow a thorough analysis to be made of the formal pattern of approval for annual budgets and for specific projects. Still less did they provide enough information to allow the interpretation of the formal procedures. The Tax Commission case studies, and even the shorter R.C.B.F. interviews, indicated that the formally established approval procedures for various types of expenditure could provide a misleading guide to the actual division of authority. As in the case of investment criteria, the division of initiative and decision-making depends not so much on the formally established rules but on the ways in which they are applied. One general point can be made on the basis of the evidence of Part One of the study - that the control exercised by the parent company is more subtle and diffuse than would be indicated by a simple examination of the composition of boards of directors, budget committees, or other decision-making groups.

In smoothly managed firms, such as most of the large firms examined in this study, the potential conflicts of interest between the investment plans of the subsidiary and those of the parent are seldom evidenced in a battle of budgets. In most of the (relatively few) parent-subsidiary relationships examined at all carefully, the records of projects developed or budgets submitted would not provide many clues to the level of approval required for various types of expenditure. Chapters 1 and 2 of the study provide ample evidence that junior officials take considerable pains to avoid the submission of investment proposals that are likely to be turned down. With certain exceptions, 5/ the preparation of annual budgets



and investment plans by the Canadian firm follows the same pattern. The senior executives of the Canadian firm are in frequent consultation with officials at several levels in the parent company, and usually are kept aware of the kind of projects which would or would not be well received at any particular time. 6/ Thus most expansion plans which do not accord with the general approach and current outlook of the parent company's management seldom reach the stage where there is any written record of their existence, let alone a formal budget submission.

### FINANCE

The 11 firms have a fair variety in their sources of funds. Some are responsible for maintaining their own financing without assistance from the parent company, and with some freedom to build up cash balances for reinvestment, while others are expected to draw funds from, or transfer them to, the parent company fairly regularly. All but two of the firms have borrowed some funds in Canada during the past decade, although none of the borrowing firms consider themselves to be tied to Canadian sources of funds.

### RESEARCH AND DEVELOPMENT

Since the product range of these firms is very close to that of their parent companies, the technology also is similar. For most of the firms research activity is pooled and undertaken outside Canada. The research performed within Canada is more usually concerned with process developments and the problems peculiar to production on the Canadian scale. This type of research may involve major outlays, as illustrated by the large research budgets of several of the firms, particularly those in the chemical industry. In a few of these firms the allocation of research effort was discussed at some length, and in these

firms at least the research which led to basic changes in products and processes was centralized in labs outside Canada. The concentration of major research activity outside Canada was explained by most officials as being due to economies of scale in research and to the prior existence of the research department outside Canada. There were exceptions:

One official noted that the compactness of the Canadian firm, and the existence of multi-purpose equipment forced on it by the necessarily short production runs, in fact gave the Canadian firm a certain advantage over the U.S. divisions in adapting quickly to new market conditions. Despite what he considered a regrettable tendency for his subordinates to copy U.S. production methods rather than work out solutions for themselves, he noted several instances where relatively fast product re-design work in the Canadian firm was later copied by the much larger U.S. plants.

In less decentralized firms than that described above, the usual procedure is to employ the techniques developed in the research laboratories of the parent company. The subsidiary usually has full access to the developmental work of the parent company and in return makes payments based on total sales and/or some measure of the amount of research information obtained. The full access to developmental work does not usually imply freedom to produce any new product which the subsidiary fancies. However, in this group of firms the Canadian firm usually is less inclined than its parent to take on new products in any case, since the available market is much smaller. Often the subsidiary will wait as a matter of course until the general acceptability of a new product has been tested by the parent company (and the Canadian market tested with imported models) before starting production in Canada. Examples were not available of the relative costs of introducing new products with and without prior testing of markets and processes by the parent company. According to the evaluation of one Canadian official, the benefits to the subsidiary—and the related advantages over purely domestic competitors—are considerable.

Resource-Based Firms Established in Canada by Firms with Similar  
Experience in Other Countries

GENERAL

Of the 18 firms of this type, three are pipelines, eight are in the petroleum industry, four are in pulp and paper, and the rest in mining and chemicals. Five of the 18 firms are owned more than 95% by their parent companies; the three pipelines are controlled by groups of oil companies; the rest are owned between 50% and 90% by a single foreign corporation. With two exceptions the firms were originally established by the parent company or companies for the purposes of developing Canadian resources, although several of the firms have grown by the acquisition of smaller Canadian controlled firms. The two exceptions are oil companies which were controlled in Canada until a majority of the shares was purchased by a foreign corporation.

RANGE OF PRODUCTS

Since the operations of the Canadian firms often are among the most important of those superintended by their parent corporations, in general there is a greater degree of responsibility placed on the Canadian management (than in firms of type two) to suggest an appropriate range of products. The Canadian firms of type two frequently assemble products from components manufactured by the parent, while firms of type one produce materials for further processing by the parent company. Firms of type three differ from these in that processing right from the raw material stage to the point of sale is done by the Canadian firm. Thus the subsidiaries are as vertically integrated as the parent corporation, and often have individual plants as large as any controlled by the parent. The decisions made by the subsidiary about the degree and kind of

processing to be employed are therefore relatively independent of the regular operations of the parent company; this fact is reflected in the considerable discretion granted to the Canadian management in making capital expenditure decisions. As with firms of type two, there are considerable differences among firms in the degree of autonomy given to the Canadian management, although it is on average considerably greater than for firms of the first two types described.

#### MARKETS SERVED

The products of the Canadian subsidiary are generally of the same type and may be at least as cheap to make as the output of the company's plants in other countries; hence there are recurring decisions about the most appropriate location for new productive capacity to serve the company's world markets. In cases where the Canadian firm has developed certain special products, or has privileged access to certain markets, the location of new productive capacity may as a matter of course be within Canada. For most of the firms, however, the parent company has an international pattern of markets and productive capacity, with most of the plants being located in countries which are net exporters of the commodities. For existing capacity there are decisions which must be made about the allocation of current output among markets, and the degree of utilization of capacity in the several plants. When new capacity is contemplated there is often some choice between alternative locations. The first type of decision is sometimes left in the hands of the local management, with authorization being given to serve a certain market area or sell on the world market. The second type of decision is the most important made by integrated international firms, and is always, in the firms studied, made in the parent company's head office. Although suggestions



may originate from the Canadian subsidiary, the comparison of alternatives is centralized.

Taxes were mentioned several times as important factors in these location decisions, although it was not possible to collect enough information about alternative sites to assess the relative importance of taxes in a representative sample of cases. It might be expected that these international firms with plants and experienced personnel in several countries would be more sensitive to marginal shifts in taxation in one country than would firms more heavily committed to a single producing or marketing area. The importance of any particular tax change, whether it was related to all corporations, or to the development of a particular resource, would depend on the relative attractiveness of the raw material supplies in various countries.

Other factors, such as political stability, were mentioned as qualifying the importance of the richness of the resource deposits. Some of the firms make explicit use of a higher rate of discount or a more stringent payback test when contemplating investment in a less stable country, and this diminishes the apparent attractiveness of resource deposits in such countries. Canada has been regarded by the firms surveyed as among the most stable of the economies in which they invest.

The influence of minority shareholders on investment decisions was examined, but little was discovered. All officials who spoke on the matter stated that the interests of the minority shareholders were considered when investment decisions were made, while only one emphasized the difficulties of attempting to promote simultaneously the best interests of the parent company and those of the minority shareholders:

- \* One senior official described as "incompatible" the twin goals of his parent company to develop, on the one hand, an international corporation in which each national company would be treated merely as a producing and selling division, and, on the other hand, to sell a substantial equity interest in each subsidiary to nationals of countries in which the subsidiaries are located. It could not then be a matter of indifference, either to the parent company or to the minority shareholders, whether the more profitable products were produced in one country rather than another.

Other officials presented the view that if a corporation's goal were to distribute investment projects among their subsidiaries without consideration of the parent company's share in their profits, the interests of the minority shareholders would coincide with those of the parent company:

- \* "If a company has our broad approach, these little things [like minority participation in certain profits] do not bother you", reported a senior executive. He went on to note that even if no consideration were given to the fact that the parent obtains 100% of the profits from projects carried on in its directly-owned plants but less than 100% of the profits from subsidiaries with minority shareholdings, that conflicts of interest might nevertheless arise between the subsidiary and the parent company. It was suggested that the Canadian firm could have profitably provided for their own requirements of a particular product and established a satisfactory export market, but that the idea was eventually dropped because most of the sales would have been at the expense of those of the parent company (whose marginal costs were supposedly less than the total costs of providing new capacity in Canada).

An official of another firm suggested that there were few real conflicts of interest, and that conflicting plans could be co-ordinated after a certain amount of consultation:

- \* An executive said that applications for all major capital expenditures were reviewed by the parent company, and noted "we don't like to use the word 'approval' when we are talking about head office." He went on to explain that the head office reviews projects and possibly asks for them to be re-presented if they are unsatisfactory in their present form. Even a formal request for re-presentation is seldom made since the line officials in the Canadian company have close enough links with their counterparts in the parent company that they are able to avoid suggesting projects which would be in conflict with other plans of the parent company.

This kind of informal consultation is sufficiently frequent for there to be little written evidence which can be found demonstrating the existence of alternative production sites in various countries with a relatively even financial balance between them.

#### BUDGETING

As with subsidiaries of the two types already discussed, these firms must obtain at least annual approval from the parent company of their plans for operations and capital expenditures. The approval of the parent company is usually more than a formal procedure, particularly in the case of large or novel capital expenditures. The nature of the parental approval varies with the organization of the firm. In some cases (including all the pipelines) the final decisions are in general made by the board of the Canadian company, with the effective control of the board resting with the representatives of the parent(s). In most of the firms the annual budgets must be considered as well by the board of the parent company. In a few of the firms the consideration of the budget by the Canadian board and by the board of the parent company is usually a formality, since the expenditures in the budget are devised by the members of the Canadian management in direct consultation with their opposite numbers in the parent company's management. The wide range of approval procedures (both formal and effective) within firms of types two and three demonstrates that our division between types two and three is not necessarily a division between firms of lesser and greater autonomy. But, although our distinction between the two types is an economic one, while many of the determinants of subsidiary autonomy are political rather than economic, there is a noticeably greater degree of independence among the larger resource-based firms of type three than among the firms of type two. The



research on which this study is based does not provide enough material for a more thorough analysis of the types of formal and informal parental approval of budgets and individual capital expenditures. One weak generalization may be made: those subsidiaries whose markets overlap least with the other operations of the parent tend to have more freedom in setting and applying budgets. Since the firms of type two tend to have more product overlap than do firms of type three (i.e., more markets which could profitably be served by either parent or subsidiary), this might serve as a partial explanation of the apparent fact that the budget procedures of type three firms seem to imply greater planning freedom for the Canadian managements.

#### FINANCE

These firms are, in general, considerably younger than those of type two, and have much more recently made major developmental expenditures. Thus, more of them have recently relied either on the capital market or on funds borrowed from the parent company. These circumstances have meant that either when budgets are reviewed or when major expenditures have been proposed there have been occasions when the availability of funds has played a part in the decisions. Credit conditions in Canada are not generally involved, since the firms usually have large export earnings which can be used to service any borrowing which might be done with the direct or indirect backing of the parent company. If cuts in spending are made for financial reasons, it is usually because a view is taken by head office officials that a curtailment of spending is in order; this may, but is not likely to, imply that the firm is finding it any more difficult to borrow funds. Several examples have been presented earlier in the study illustrating the application of financial pressures by parent companies on the spending of their Canadian subsidiaries.



RESEARCH AND DEVELOPMENT

Firms of this type are not as subsidiary as those of type two; their operations are usually more or less self-contained and may be as large as the company's operations in other countries. There are not therefore the same reasons for carrying on research exclusively in another country, although there may be similar reasons for centralizing it in one location or another. Since the Canadian firms are much newer than their parents, the research activity is usually centred outside Canada. However, many of the firms have established research facilities in Canada, primarily to handle problems specifically related to Canadian production. In several of the firms the Canadian research and development activities have led to changes throughout the international firm. In other cases there have been process or marketing developments in the subsidiary which have been copied by the related firms in other countries. As might be expected, there continues to be for most of the firms a net inflow of technical information from the parent company.

Firms whose Major Operations are in Canada Although a Majority  
of the Shares is Held Outside the Country

There is little evidence indicating that the investment behaviour of four of these six firms is significantly different from that of firms whose shareholders reside in Canada. The other two firms are controlled by other firms controlled abroad. In all six firms the dominant shareholders are not firms operating similar plants in other countries. The relationship between the major shareholders and the company is therefore not like that between parent corporation and subsidiary, and virtually none of the analysis in the preceding pages of this appendix applies to these firms.

There are some ways in which these firms may differ from those controlled in Canada, but they are differences of degree rather than of kind. For example, some of these firms have adopted a very international approach in their investment and financing, indicating that their directors do not feel tied to Canadian plants or Canadian markets. This type of approach may be more easily credited to shareholders and directors who are not Canadian residents than to those who are, but in fact the international approach of these firms has been matched by that of several firms whose shareholders are mostly Canadians. Since the tax treatment of dividends to non-Canadian shareholders differs from that of dividends to Canadian shareholders, it might be supposed that a company with predominantly non-Canadian shareholders might consider themselves to have a higher cost of capital because of the unavailability of the dividend tax credit. In fact, since the shares of these firms are traded on Canadian as well as foreign exchanges, the effects of the dividend tax credit are fully reflected in the market prices of the shares. The cost of equity capital for all the firms might equally well be represented by the inverse of their price-earnings ratios, and there is no reason to suppose it would be higher for those firms with more foreign shareholders, since Canadian shareholders are presumably buying and selling so as to equalize the marginal return on both types of shares to a Canadian shareholder receiving the dividend tax credit.

Changes in Canadian taxes influence the investment decisions of these firms by altering the relative profitability of operations inside Canada and those in foreign countries. In principle the effects are no different for these six firms than for any firm whose major operations are within Canada. The firms' productive capacity is mainly within Canada, and they

may rely to a greater or lesser extent on Canadian raw materials. The opportunities for utilizing managerial and technical skills in the construction and operation of plants in other countries exist to a greater or lesser extent for them all. Except in a few cases, all firms whose major operations are within Canada are less prepared to undertake new foreign investment than are those international firms that have already set up operations in a number of different countries. This fact is reflected in the more stringent rate of return standards adopted by Canadian-based firms (whether controlled outside Canada or not) when considering capital expenditures in overseas countries.

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- 2/ Including exploration expenditures by firms in the mining and petroleum industries.
- 3/ More current and comprehensive measures of the overall importance of foreign ownership of Canadian firms may be found in the Annual Report of the Minister of Trade and Commerce under the Corporations and Labour Unions Returns Act, Ottawa, Queen's Printer, 1965.
- 4/ There is an interesting discussion of the management policies of U.S. parent companies dealing with foreign manufacturing subsidiaries to be found in Barlow, E.R., Management of Foreign Manufacturing Subsidiaries, Division of Research, Graduate School of Business Administration, Harvard University, Boston, 1953, Chapter IV.
- 5/ The most obvious type of exception arises in firms where the budget requests typically exceed the amounts the parent company is willing to invest, and proportionate cuts are made in the spending plans of the various subsidiaries. In such circumstances, some Canadian subsidiaries inflate their budget proposals in order to obtain, net of budget cuts, the funds they wish to spend. This method of budget apportionment appears most often in firms whose divisions are not evaluated primarily in terms of the rate of return they achieve.
- 6/ Thus one firm was contemplating the production of a good which could profitably (for the Canadian company) compete with one of the products currently manufactured by the foreign parent. Although no explicit calculations were made of the relative size of the Canadian firm's profit and the parent company's potential losses, the Canadian officials recognized the possible conflict of interests and dropped the idea, without any type of formal approach having been made to the parent company.















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